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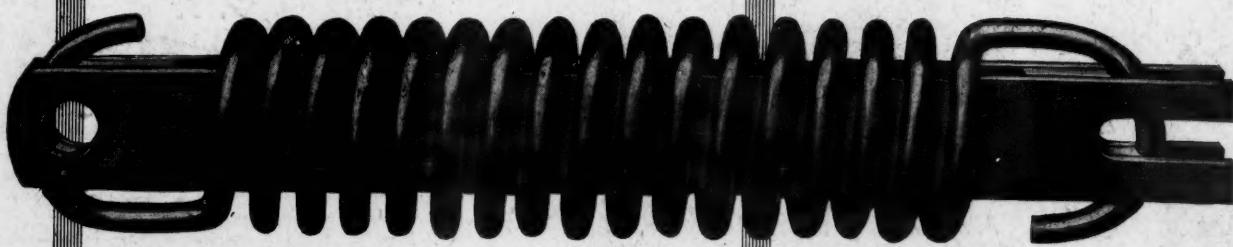
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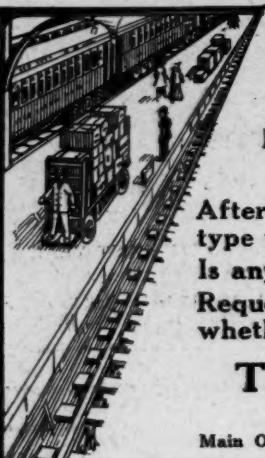
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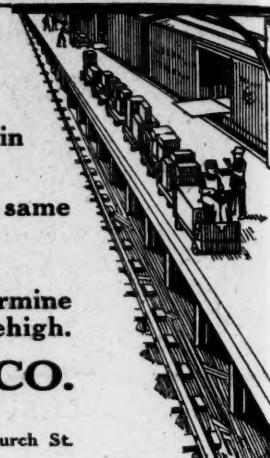


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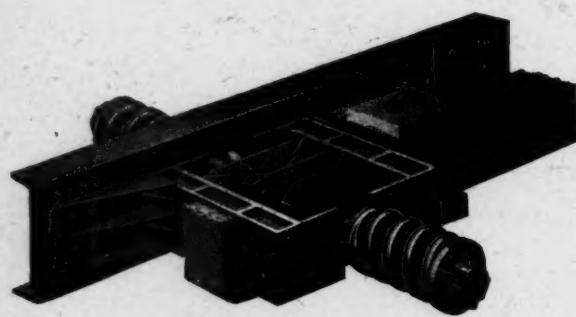
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Railway Age Gazette

Volume 61

December 15, 1916

No. 24

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* Illustrated.

We have been honored by Clifford Thorne, chairman of the Railroad Commission of Iowa, with a communication which

Concerning Batting Averages, Umpires, etc. we publish in another column in this issue. We are greatly pained by the cruelly sarcastic manner in which Mr. Thorne refers to our "wise understanding" and to the "profound learning and wisdom with which your (our) brain is burdened." If our "wise understanding" and our "profound learning and wisdom" do not find favor in the sight of this greatest of railway experts, we are undone, indeed. Fearful as we are, however, of the complete loss of his good opinion, we humbly suggest that his own reasoning may not be flawless. Mr. Thorne implies, as we understand him, that when the Interstate Commerce Commission passes upon the relationship between state rates and interstate rates the "parties to the difference" are the Interstate Commerce Commission and one or more state commissions. But may not the real "parties to the difference" be the railways, on the one hand, and the state commission, or the shippers of a particular state, on the other? In the Shreveport case the Railroad Commission of Louisiana and the shippers of that state were lined up with the railways on one side and the Railroad Commission of Texas and the shippers of that state were lined up on the other side. The Interstate Commerce Commission seems, to our poor understanding, to have played a part analogous to that of an umpire. Suppose, however, that the Interstate Commerce Commission really is one of the "parties to the difference," and therefore should not be allowed to be umpire. Who, in that case, would Mr. Thorne have to umpire the game?

The Interstate Commerce Commission has issued an order changing the fiscal year for which railroads are required to

Change in the Fiscal Year Adopted report to the Interstate Commerce Commission from the year ending June 30 to the year ending December 31, thus making it coincide with the calendar year. The Association of American Railway Accounting officers had voted by a large majority to favor this change and it was largely through the efforts of this association that the change was brought about. The

Railway Age Gazette has for a long time strongly advocated the change. It is logical; it makes all the season's maintenance work fall within one reporting year for all roads except a few in the extreme southern part of the United States; and it brings the hardest work of the accounting department in the winter instead of in the hot months of summer. Some roads already have the calendar year as the period covered by their reports to their stockholders. The more important of these are the roads composing the Pennsylvania system, the New York Central lines, the Delaware & Hudson, the Erie and the Delaware, Lackawanna & Western. The change will relieve these companies of the additional labor involved in preparing reports as of June 30 for the Interstate Commerce Commission. The change from the year ending on June 30 to the calendar year will involve increased work temporarily for the accounting departments of most roads, but if they change their period for reporting to their stockholders as well as to the commission to the calendar year, the burden of keeping two sets of accounts will extend over a period of only six months or a year. This order of the Interstate Commerce Commission is in the nature of constructive regulation, and is to be much commended.

While the cost of reproduction new of a railroad is only one of the elements which is to be taken into consideration by

What Would It Actually Cost? the Interstate Commerce Commission in the determination of value of the property, it is likely to be the most important single element. Were the courts to pass on the value of a property to be taken over by the government, the estimated cost of reproduction new would be an important factor in determining the price which the government would have to pay. One of the costs in actually building a railroad is the cost of raising the necessary capital. It is not theory but fact which ought to be taken into consideration in every step of estimating the cost of reproduction of a railroad, and this is especially important in the consideration of the cost of capital. It is pure theory to say that money can be obtained to build a railroad at 5 per cent or 6 per cent, because money is being lent at these rates by the banks. It is fact, not

theory, that the money needed to build a railroad of any length could not be borrowed at the bank; it would have to be raised through the sale of stock and bonds of the proposed railroad company. If the railroad is to be built through Missouri, only bonds in a face amount equal to the par value of stock could be issued. Part of the money, therefore, would have to be raised through the sale of stock. Would anyone say for a moment that this stock could be sold at anything approaching par? Even if there was a provision by which dividends would be cumulative at the rate of 7 per cent it absolutely could not be done. The railroad builder who could sell stock of a company which proposed to build 1,000 miles of railroad at 50 and 5 per cent bonds at 80 would be a genius. Let some of the theorists who talk about 5 per cent money actually go out and try to raise some for building a railroad; they would very quickly find that, regardless of theories, the price that has to be paid for money, like the price of labor or of materials, is the price which the seller is willing to accept. It is just as much a false estimate to assume the price of money to be 5 or 6 per cent because money for other purposes and with other security can be obtained for that price as to assume that bricklayers or other skilled highly paid labor can be obtained for \$1.50 a day because labor for other purposes can be obtained in some parts of the country at as low a price as this.

THE ARGUMENTS FOR STATE REGULATION

PRESIDENT THELEN of the National Association of Railway Commissioners and of the California Railroad Commission, presented very effectively before the Newlands committee last week the argument of the state commissioners against turning any of their regulatory powers over railroads over to the federal government. W. J. Bryan presented an argument along the same line that was a joke. Mr. Thelen gave the committee a very pleasing picture of the work of the California commission to show that it had not exercised its powers in a spirit of vindictiveness against the railroads, that it had co-operated with them in many ways which they appreciated, that it had not been afraid to raise rates when it considered an advance warranted, that it had not discriminated against interstate commerce, that it had not stopped railroad construction in California, and that, generally speaking, it got along very well with the railroads. But the fact that some state commissions are better than others or even that some state commissions are performing their duties in an efficient and highly laudable manner does not affect the argument of the railroads that the present system of dual state and federal regulation is unsystematic, uncoordinated and conflicting, that it imposes burdens upon the railroads which are largely responsible for their present condition and allows states whose commissions are either ignorant or narrow or selfish to discriminate against other states and against interstate commerce.

Mr. Thelen made a strong argument for "home" regulation which would be hard to answer if it were possible to secure some uniformity and consistency in the concurrent application of state and federal regulation and if it were possible to have commissions in all of the states as intelligent, as efficient and as fair as those we now have in a few states. But such a possibility, as long as the states retain their present powers, seems out of the question. Those who are so anxious that the federal government shall not interfere with the powers of the states do not seem to realize that many, if not most, of the states are interfering with the exercise of the authority of the federal government over interstate commerce and are discriminating against each other. Mr. Thelen seemed to think that cases of state discrimination in rate matters are a comparative rarity and that the Supreme Court in the Shreveport decision has given the Interstate

Commerce Commission ample power to deal with them. That the commission itself does not think so is indicated by the recommendation in its annual report that it be given legal authority for a plan of co-operation with state commissions in the handling of cases involving the conflict between state and federal authority, but without abdicating any of the federal authority finally to control questions affecting interstate and foreign commerce. But co-operation is a rather difficult thing to provide by law, especially when so many of the state commissions, like that of Texas, insist on dealing with questions affecting the commerce of a nation from a narrow local point of view. Even the Shreveport case after five years is by no means settled yet and that such situations as that presented by the Shreveport case are by no means rare is shown by the Interstate Commerce Commission's statement in its annual report that it has had to deal with over 50 such cases. The commission said: "Were we to look about for opportunities to apply the principles of the Shreveport case we could find them in every part of the United States, and we have been requested in several instances to institute investigations upon our own initiative with a view to removing unjust discriminations in such cases, just as we have proceeded in scores of other instances on our own initiative to apply remedies which the law provides."

Mr. Bryan, out of the abundance of his ignorance, regaled the committee with two hours of claptrap in opposition to the proposals for exclusive federal regulation of railways. His principal objection seemed to be that there should be more regulation of railways, not less, and he said that federal regulation should be added to and not substituted for state authority. Mr. Bryan thought that the job was too big for a central authority, that giving so much power to the federal government would create too great a temptation for the railroads to corrupt the members of Congress and that the representatives of the people in Washington are less amenable to the control of the people than those in the state legislatures and commissions. He mentioned some examples of the influence of the railroads on Congress in the past, which he thought had been exerted by means of the pass book or the check book, but did not recall any instances in which the local statesmen had succumbed to such influences. As an illustration of his claim that the federal government is less anxious to carry out the will of the people than the state authorities, he cited the fact that some states have a two-cent fare law while the Interstate Commerce Commission has found a higher rate reasonable. He smilingly told the committee how he had recently saved 85 cents by buying a ticket to a point near a state line at the lower state rate and then buying another ticket for the remainder of his journey. He criticised the roads for ignoring the states by charging more for interstate travel than the sum of the local rates and probably would have been greatly surprised if the fact had been mentioned to him that he had violated a federal law in paying less than the legal fare for an interstate journey.

Mr. Bryan insisted that federal regulation of security issues should be concurrent with state regulation on the same subject. How hazy his ideas were is shown by his answers to questions by Senator Newlands as to how the plan would work in case the state and federal authorities should differ as to the amount of securities to be authorized. He said first that the action of the state would control only within the state, which is rather meaningless as applied to security issues, but when pressed further declared that if the state authorized a greater issue than the federal government the road would not need to take full advantage of the maximum allowed by the state. He added that state charters are permissive and that if one state should be more liberal than others no harm would be done because only the people of the state would be affected. Mr. Bryan was positive that

Congress ought not to interfere with state authority, but he either purposely or ignorantly missed the point entirely that the present difficulty lies in the fact that some states interfere with the rights of other states because their regulation is more restrictive than that of other states or of the federal government, rather than with any occasional excess of permissive liberality on the part of a state.

Mr. Bryan admitted that he was a little out of date with some of the statistics he used, as when he referred to the mileage of the railways of the United States as 160,000 and said that he was better acquainted with principles than with details, but he did not seem to realize that most of the facts he was using to criticise the railroads were of the same ancient vintage.

In discussing the amount that railroads should be allowed to earn Mr. Bryan was more liberal toward the railroads than he probably intended to be. He said he would allow them to earn enough to keep their stock at par and to provide a surplus up to, say, 25 per cent of their capitalization, on condition that the capitalization should be readjusted to the value of the property. But as he suggested that the valuation should be based on the present cost of reproduction of the property, which in the case of many roads would greatly exceed the present capitalization, it would be interesting to turn him loose at the job of trying to earn such dividends and surplus as he proposed out of two-cent fares and the kind of freight rates that some of the states whose rights he is so anxious to protect now choose to permit.

Mr. Bryan told the committee that he no longer desires government ownership, but that he regards it as inevitable if the proposals for an increase in the regulating authority of the federal government are carried out. Mr. Thom, representing the railroads, had told the committee that he regarded government ownership as inevitable unless there is a vast improvement in the system of regulation. If the idea of government ownership is to become a bugaboo to be used by both sides it will serve a useful function.

THE FIRST VALUATION REPORTS

MANY railway men have been apprehensive regarding the attitude which the department of valuation of the Interstate Commerce Commission would take regarding the many important questions involved in the valuation of their properties and as the work has progressed they have criticised the lack of knowledge of the practical problems involved in the construction of a railway property displayed by a considerable number of the men holding responsible positions with the government. A study of the reports which have been issued to date tend to confirm these fears. The first complete analyses of any of these reports are contained in the objections filed by the Atlanta, Birmingham & Atlantic and the Texas Midland to the so-called tentative valuation reports on their properties. If the 56 objections in the A. B. & A. are sustained in whole or even in part, they constitute a severe arraignment of the Division of Valuation.

It is to be expected that some differences of opinion will arise between the employees of the railways and the representatives of the commission but the attitude taken by the government forces on so many of these questions is creating an impression among railway men that they are not endeavoring to make a fair valuation but to fix minimum bases for valuation and force the railways to appeal to the commission or to the courts to prove their rights to more liberal allowances. According to the act of Congress under which this work is being conducted the commission is required to ascertain the fair value of the properties of the carriers. The figures incorporated in the so-called tentative reports may therefore be considered to represent the fair values of the properties as ascertained by the Division of Valuation. Their reputations as practical railway men must be assumed

to rest upon their knowledge as reflected in these reports. It is for this reason that the reports are particularly disappointing.

If the valuation work is to be carried to a successful conclusion and is to be of value later it is essential above all things that the commission impress the carriers and the public alike with its attitude of fairness and establish a feeling of confidence in its decisions. If it allows the impression to become prevalent that it is a partisan interested only in forcing the valuations to the lowest possible figure, irreparable damage will be done to the carriers and to the cause of government regulation as well. It was unfortunate that when giving the capitalization of the A. B. & A. as \$59,565,176 on June 30, 1914, the date of valuation, no mention was made of the fact that this had since been reduced to \$39,290,000. As this reduction in the capitalization was made over nine months before the valuation report was completed it could hardly have been unknown to the commission. Such a statement would not have detracted in any way from the value of the report, while it would have prevented an injustice being done to the road.

An interesting commentary on the relative effects that the purposes of taxation and of valuation bodies may have on their reports is afforded by the statements in the reports of the Atlanta, Birmingham & Atlantic and the Texas Midland that "no other values or elements of value were found to exist," although the state of Georgia has taxed the A. B. & A. on the sum of \$1,200,000 for "franchise values" which it had evidently found to its own satisfaction, and that the state of Texas has taxed the Texas Midland on the sum of \$500,000 for other values which it believed to exist.

The government will have difficulty in convincing any railway man of its fair intentions when it makes no allowance in the valuation for the working funds on hand and the value of materials and supplies in store, although this must necessarily have been provided for in the capitalization. It is evident that credit must be allowed in one account or the other and as working capital and materials are essential to the operation of the road they should be included in the valuation. The commission would undoubtedly be the first to complain if the roads allowed their stocks of materials to decrease below the amounts normally considered necessary to insure safe, continuous operation.

Although the commission considers the cost of reproduction in arriving at most of its figures, it is interesting to note that it changes to "present value" in discussing land. It would be instructive to learn the reason leading to this action, since the valuation act does not contemplate the treatment of land in any way different from other classes of railway property. The commission will have a hard time to convince railway men or the land owners from whom the railways purchase property that the "present value" of the land is only that of adjacent acreage tracts without any allowances for cost of acquisition, severance damages, destruction or removal of buildings, etc. In other words, if the government maintains that the right of way and terminal properties of the railways can be reproduced for the bare acreage value of the land it shows that it is not familiar with facts which are common knowledge to all railway men.

In its objection, the A. B. & A. states that "it would not be a reasonable reproduction program that ignores physical obstacles actually encountered in the original construction, the removal of which was a proper charge to capital." In estimating costs of reproduction many assumptions must necessarily be made, but for the commission to ignore many of the items of value pointed out in the objections indicates either a surprising lack of knowledge of the problems actually involved in railway construction or a desire to force the railways to contest every valuation and to fight for their proper rights in this matter. The objection made by the A. B. & A. to the accounting report, that the effect "is not to

furnish facts or information but to discredit the actual investment of the carrier and its good faith in making same" is a serious one, but the failure to make any reference in the report on this road to the reduction of over \$20,000,000 in its capitalization made subsequently to 1914 certainly does not indicate a disposition on the part of the department of valuation to be fair to this road.

THE RAILWAY SITUATION IN CANADA

THE railway situation in Canada at present is as peculiar as, from the standpoint of the public, it is unsatisfactory. Canada now has the largest mileage of railways in proportion to its population of any country in the world. In spite of this it is suffering from a "car shortage." It has so many miles of railway that the business available is not sufficient to support all the lines and a large part of the mileage is virtually bankrupt, and yet the railways are unable satisfactorily to move the available business.

These statements sound paradoxical, but they are plain recitals of facts. The trouble, from the standpoint of physical operation, is partly due to the circumstance that most of the mileage constructed within recent years was built with the intention of providing it with equipment later on when it should be needed. When it was finished it was impossible to provide enough equipment, partly because the financial resources of those who did the building were largely used up, and partly because it was impossible to get filled even the orders for equipment that were placed.

In addition to the physical condition of inadequacy of equipment, there is, as indicated, a financial condition of a serious character. The great Canadian Pacific system, which from its inception has been managed with extraordinary skill and efficiency, is handling a heavy business and earning handsome profits. The Grand Trunk, which is physically an excellent property, and which gives good service, but which has never earned much for its shareholders, also is doing unusually well. But the Grand Trunk is burdened with the Grand Trunk Pacific, which it built from Winnipeg to the Pacific coast with the aid of government guarantees, and which has not been able to earn interest on the investment. The Canadian Northern, likewise a transcontinental line to the Pacific, which closely parallels the Grand Trunk Pacific for many miles, and which also was built with the aid of government guarantees, also has proved unable to earn its interest.

The various governments of Canada, Dominion, provincial and municipal, have given cash aid to the private railway companies aggregating \$238,832,000. They have granted them almost 44,000,000 acres of land of an estimated value of \$4 per acre, or \$176,000,000. The Dominion bought \$33,000,000 of Grand Trunk Pacific bonds. In addition to all these things, the Dominion and other governments of the country have guaranteed interest on investments made by private railway companies to the extent of \$351,000,000. It is these guarantees of interest, and especially those which have been made to the Grand Trunk Pacific and the Canadian Northern, which are causing the greatest concern to the Canadian public. The government already has had to pay some of the interest which it has guaranteed. It is practically certain that it will have to pay more. In fact, there is as much pessimism in Canada now regarding the railway situation as there was optimism a few years ago. Almost every intelligent person one talks to in that country now expects it to be years before the Canadian Northern and the Grand Trunk Pacific will be able to pay their way without government aid.

The whole situation presents a problem the only solution of which appears to many people to be government ownership and operation. There were recently published in the

Journal of Political Economy and the *Railway Age Gazette* certain articles regarding government ownership in Canada, the tenor of which was indicated by the title of the first of them, viz., "The Failure of Government Ownership in Canada." These articles have attracted much attention in Canada. With great unanimity the advocates of an extension of the policy of government ownership in that country have rushed to attack them. They drew forth a reply from J. L. Payne, comptroller of railway statistics of Canada, which was published in the *Railway Age Gazette* for October 6 and a reply to which was published in this paper for October 13. Mr. Payne's article was fair, intelligent and temperate. But as much cannot be said for most of the articles which have been published defending and advocating an extension of government ownership in Canada. There is grave danger that that country, as has been the case with many others, will be committed to government ownership at a time of turmoil and stress when sober investigation and thought are difficult, and, in consequence, without the true merits of the policy of government ownership ever being thoroughly considered by the public or by public men.

The question as to what action should be taken regarding the railways whose interest the Dominion and provincial governments, especially the former, have guaranteed is a most serious and difficult one. But before it can be intelligently decided whether the true solution is for the government to take these railways over and operate them, some consideration surely should be given to the past history of, and the present situation with respect to, both government and private ownership in Canada. The Dominion government for more than 50 years has owned and operated the Intercolonial Railway. As has been conclusively shown in the articles above alluded to, which have appeared in this paper, this road has incurred enormous financial losses. These losses have been defended on the ground that they have been due to the lowness of the road's rates. The untenability of this argument already has been shown in these columns; and further valuable evidence regarding this phase of the matter is presented in the article by Francis A. Bonner, which is published elsewhere in this issue of the *Railway Age Gazette*. As has been pointed out heretofore in these columns, and as Mr. Bonner shows in greater detail, the average revenues per passenger mile and per ton mile of the Intercolonial do not accurately reflect its absolute rates. All contentions to the contrary notwithstanding, it is not a difficult matter to demonstrate that the bulk of the losses of the Intercolonial practically throughout its existence have been due to wasteful management.

An equally glaring instance of mismanagement is afforded by the construction by the Dominion government of the National Transcontinental Railway. The building of this line afforded probably as bad an example of the combination of politics, incompetency and graft as has ever been known in the history of North American railroading. The government commission which investigated its construction reported that at least \$40,000,000 "was needlessly expended in the building of this road, without including the money that was unnecessarily expended in building the railway east of the St. Lawrence river." The average cost of construction per mile is now officially reported at \$76,632, and this includes nothing for equipment. In other words, this new road without equipment cost \$10,000 per mile more than the average capitalization of the railways of the United States. Although it represented, without equipment, an investment of \$153,000,000, it earned in 1915 a total of only \$281,000, which was \$76,000 less than its operating expenses. The total loss, including unearned interest which it inflicted on the taxpayers in that year was at least \$6,000,000; and it is questionable if it ever will earn anything but deficits.

But, say the defenders of government ownership, it is

not fair to take the Intercolonial or even the National Transcontinental as an example of government ownership in Canada. One should take the Temiskaming & Northern Ontario. Just why one should take a railway having only 329 miles of line and which is owned and operated not by the Dominion, but by the Province of Ontario, to test what probably would be the results of the ownership and management by the Dominion of about 36,000 miles of railway is somewhat difficult to understand. As a matter of fact, the Temiskaming & Northern Ontario has been relatively far more successful than the other government railways of Canada. It has opened up a rich territory to settlement and development, and it seems to have been, in the main, well managed. But its average rates, although doubtless reasonable for this small property with its light traffic, are higher, as Mr. Bonner points out, than the average for all the railways of Canada. Furthermore, its management has one serious vice that characterizes the management of all the other government railways of that country, viz., that it imposes a burden on the taxpayers. The road has cost \$20,085,000, and yet in 1915 its net earnings were only \$69,000, or less than $3\frac{1}{2}$ tenths of 1 per cent on the investment. The bonds issued to build it bear interest at $3\frac{1}{2}$ per cent. It is reasonable to assume that less than par was realized from their sale, and that the interest paid on the money actually derived from them would be at least 4 per cent. But even at $3\frac{1}{2}$ per cent the interest on the investment would be \$700,000, which means that the road failed in 1915 by over \$600,000 to earn its interest. This deficit had to be paid by the taxpayers. The year 1915 was financially the worst in the road's history, but its statistics for 10 years, as given in Poor's Manual, indicate that never in any year has it earned all of its interest.

There are now five government railways in Canada, with a combined mileage of over 4,000 miles. Not one of them earns the interest on the investment in it. In fact, four out of the five, having about 3,600 miles of the total mileage, failed in 1915 to earn even their operating expenses in spite of the fact that they represent an investment per mile which exceeds by \$8,000 the capitalization per mile of the railways of the United States. And yet, in all of the defenses of government ownership that are being put forth in Canada almost no reference is made to who pays the enormous losses of these government railways. The advocates and defenders of government ownership twist, turn, dodge, and duck to avoid this point, when, as a matter of fact, it is one of the most important points to be considered in the whole controversy. If the Canadian public realized how many millions of dollars in taxes government ownership and management is already costing it each year, it would receive in a very different spirit the plausible but sophistical arguments for extensions of this policy with which it is now beguiled.

Let us turn now to the cases of the Grand Trunk Pacific and the Canadian Northern, which have failed to earn the interest which the government has guaranteed for them. The government cannot avoid paying or reduce this interest by the simple device of making these roads government property. It is already paying many millions of dollars a year in unearned interest on the railways which it now owns, and if it takes over the Grand Trunk Pacific and the Canadian Northern it will have to pay interest on the investment in them from taxes as long as their earnings are insufficient to meet it, just as it now pays from taxes the interest on the investment in the Intercolonial and the National Transcontinental. The question which ought to be considered, then, is as to whether the burdens which the public will have to bear and the benefits which it will derive from the Grand Trunk Pacific and the Canadian Northern will be greater if the government leaves them in private hands or takes them over as its own property. Since the

interest to be paid on the investment will be substantially the same under either private or government ownership (the interest of the private companies being already largely guaranteed by the government) the really crucial question involved is whether these railways probably will be more economically and efficiently developed and operated under private or under government management. The economy and efficiency with which they are managed will determine the burdens they will impose on the public and the benefits it will derive from them. This point is receiving almost no consideration from the advocates of government management. Why is this? Obviously because private management of railways in Canada has, up to this time, been so much more economical and efficient than government management that the advocates and defenders of the latter dare not institute the comparison. Private management of railways in Canada has, in the main, been economical and efficient. Government management has, in the main, been incompetent and wasteful. The conclusion inevitably suggested is that under government management the burdens that would be imposed on the public by the Grand Trunk Pacific and the Canadian Northern would be greater and the benefits conferred less than under private management.

The railway companies are attacked upon the ground that their influence upon public affairs has been bad. They are denounced because, as is alleged, they have secured excessive concessions from the government of Sir Wilfred Laurier and from the succeeding administration of Sir Robert Borden. But assuming that these criticisms are just, there were two parties to every one of these transactions, the railway company on the one hand, and the government on the other. This being the case, should not the government as well as the railway companies be held responsible for any unwise, improvidence or dishonesty which marked these transactions? If the government in these transactions showed improvidence, or, as is sometimes implied, was actually corrupt, can this, by any process of reasoning, be tortured into an argument for government ownership and management of all the railways? Such allegations, if well-founded, simply mean that the government has been as incompetent and wasteful in dealing with the private railway companies as it has been in managing the state railways. This is hardly a valid argument for extending the policy of government ownership and management.

If the present railway situation in Canada is in large measure a result, as is now widely charged, of the exercise by the private railway companies of an excessive influence on politics and government, the remedy is not necessarily government ownership. The people of the United States have shown that government regulation can be used not only to break, but to completely destroy the influence of the railways in politics. The actual experience of Canada with government ownership and management is the very strongest argument that could be advanced against an extension of that policy in that country. The Canadian railway problem is at this time as difficult as it is important; but its solution should be found in some system of private management subject to public regulation, not in a dangerous and unnecessary extension of government ownership.

HELPING EXPORT TRADE

THE Bureau of Foreign and Domestic Commerce is that branch of the Department of Commerce which investigates the possibilities of American trade in foreign lands. The bureau last year at a time when export business was receiving an extraordinary degree of attention, worked under an appropriation of \$505,000, although it asked Congress for \$935,000 and could have used that and more. This year it has asked Congress for \$855,000, exclusive of about \$150,000 for printing which is taken care of by the Bureau

of Engraving and Printing. The Bureau of Foreign and Domestic Commerce is, of course, concerned with many kinds of export business, but it has been giving no small share of its attention to railway equipment. At present, for instance, Frank Rhea, formerly with the Interstate Commerce Commission Division of Valuation, is in Australia, having just left New Zealand. He will go on to study the markets for railway equipment in the countries of Japan, China, and India, also in South Africa, or, in general, in the Far East.

The bureau also hopes to send an expert to study the ports and transportation facilities in Russia and the Far East, one to investigate mineral resources in the Far East and it would like to send another to study the markets for railway equipment in Latin America. It is feasible for the large car and locomotive companies of the United States to send experts of their own to investigate and sell equipment in a foreign country, but this is a thing the specialty companies cannot do. It is a fact, however, that the big companies have seen the usefulness of the bureau's work and that they are co-operating with it. They realize how much better chance an accredited representative of the government has of getting



The Seaboard Air Line

trade data. They can see the advantage of securing the assistance of an investigator who knows his subject and who travels far and wide in search of information.

All members, large or small, of the railway supply trade have already realized that export business in railway supplies is going to become more and more important in the immediate future. The manufacture of railway equipment in the belligerent countries is almost at a standstill, while roadbed, cars and locomotives are being called upon to do tremendous amounts of work and presumably are not being properly maintained. The bureau is asking for only \$855,000.

England is subsidizing a single company with \$250,000 to help it encourage trade between England and Italy. But it does no good to know these facts and to believe that the bureau should receive proper financial assistance. Every railway supply firm and, in fact, every railway that has hopes of doing export business now or in the future, should get in touch with the representative and senator from its district and state and show them that export business in general and the welfare of its own plant in particular will be benefited by the bureau's assistance.

SEABOARD AIR LINE

TOTAL operating revenues of the Seaboard Air Line were 12.46 per cent more in 1916 than in 1915. The same proportion of gross was appropriated for maintenance in 1916 as in 1915, which meant very considerably increased expenditures in 1916 for this purpose. Through a smaller proportionate expense for transportation \$1,589,000 out of



the total of \$2,713,000 increase in revenues was saved for net, and after the payment of interest, rentals and the full 5 per cent on the adjustment income bonds there was a net income in 1916 of \$1,270,000, comparing with only \$15,000 surplus in 1915. More liberal expenditures for maintenance were justified, the Seaboard having cut its maintenance

of way expenditures down as low as was practicable and safe in 1915. The showing made in transportation expenses is a reflection of improvement in operating methods following better supervision and certain changes in the way of attacking some of the Seaboard's operating problems. It used to be thought that the use of heavy locomotives in freight service on the Seaboard was not practical because so much of the freight was high grade and had to be moved on a fast schedule. In 1915, however, 19 Mikado locomotives were bought for freight service. The full effect of the use of these heavier locomotives was shown in 1916.

The total revenue ton mileage in 1916 was 1,694,457,000, an increase over the previous year of 344,066,000, or 25 per cent. The number of passengers carried one mile was 233,528,000, an increase of 17,150,000, or 8 per cent. Transportation expenses amounted to \$8,191,000, an increase of \$226,000, or less than 3 per cent. Passenger train miles totaled 6,085,000 in 1916, an increase of 105,000 over 1915, or less than 2 per cent. Freight train mileage totaled 4,522,000 in 1916, an increase of 52,000, or about 1 per cent. The loaded car mileage east or north totaled 67,358,000, an increase of 14,022,000, and west or south 42,293,000, an increase of 3,813,000. The empty car mileage east or north totaled 10,614,000, a decrease of 2,632,000, and west or south 32,584,000, an increase of 1,933,000. The average freight train load of revenue freight was 336 tons, an increase of 57 tons or 20 per cent. The average loading per car was 15.45 tons as against 14.71 tons in the previous year.

The increase in tonnage of freight carried by the Seaboard Air Line last year was principally in low grade commodities and this tendency toward a greater and greater proportion of low grade commodities which permit of heavy loading, but carry a low ton-mile rate, is a factor to be borne in mind in the study of the development of operating methods on the Seaboard. With operations, character of equipment and general development of the property along the right lines, a lower average ton-mile rate will not only be offset by more economical transportation costs but in time the road will have a lower operating ratio and a larger net in consequence of the change that is taking place in the character of its traffic. In 1916 the total tonnage of all commodities carried was 9,769,000, comparing with 8,577,000 tons in 1915. Of the total tonnage carried in 1916 25.92 per cent was lumber and forest products as compared to 25.63 per cent in 1915. Products of mines furnished 24.18 per cent of the total in 1916 and 23.01 per cent in 1915. Manufactures furnished 34.82 per cent in 1916 and 33.18 per cent in 1915. Products of agriculture furnished 13.97 per cent of the total in 1916 as against 17.15 per cent in 1915.

The purchase of the Mikado locomotives was in anticipation of changing operating conditions.

The work of ballasting which has been going on in the last few years is another step in the direction of the development of heavier trainloading. The Seaboard Air Line now has 1303 miles of its main line ballasted with gravel or slag, and there remains only between two and three hundred miles of main line to be ballasted.

Another important step in the development of the property is now nearing completion. As of November 16, 1915, the Carolina, Atlantic & Western was merged with the Seaboard Air Line. The comparisons made in the annual report and in these comments are for the combined figures of the two roads for both years. The Carolina, Atlantic & Western was building a line from Charleston to Savannah, with a maximum of 0.3 per cent grades and 2 deg. curves. This line is being completed by the consolidated company. When this line is completed at least twice as heavy a trainload can be hauled from Hamlet, N. C., to Savannah, Ga., 250 miles, as over the old line of the Seaboard by way of Columbia, S. C. The Charleston-Savannah line runs through a very rich agricultural country, so that this line will develop local traffic

as well as serving as a low grade line for through freight. Grade revision work between Hamlet and Charleston has been carried on, so that with the completion of the Charleston-Savannah line the Seaboard will have a main line from Hamlet to Jacksonville, Fla., 386 miles, with maximum grades of 0.5 per cent. Other grade revision work is being done between Raleigh, N. C., and Sanford and between Sanford and Hamlet. Besides cutting out short irregular grades this work will entirely eliminate two pusher grades.

The increased expenditures for maintenance have already been mentioned. The following table shows the percentage of each class of expenses to total operating revenues in 1916 and 1915:

	1916	1915
Maintenance of way and structures.....	11.94	11.45
Maintenance of equipment.....	14.27	14.72
Traffic expenses	3.37	3.57
Transportation expenses	33.44	36.57
Miscellaneous expenses	0.56	0.52
General expenses	3.10	3.37
Transportation for investment—Cr.....	0.01	0.01
Total	66.68	70.19

In 1916 maintenance of way and structures expenses averaged \$848 per mile, and repairs, exclusive of renewals and depreciation and overhead of equipment, averaged \$2,304 per locomotive, \$706 per passenger car, and \$56 per freight train car. The maintenance of way figure looks low, but the characteristics of the property must be kept in mind when making a comparison with northern lines. Section labor, although not particularly efficient, is very cheap. One dollar a day is about what negro section hands get. Ties cost less than half of what they do on many roads in the North, and in 1916 1,606,000 cross ties and 977 sets of switch ties were put into track, the cost varying from a little over 30 cents to about 40 cents. The ties now being used are principally cypress and oak, replacing pine. Most of the ballast on the Seaboard Air Line has only been put on in recent years, so that as yet there is almost no charge to expenses for ballast renewal.

During the year the company created a first and consolidated mortgage to secure an authorized issue of \$300,000,000 bonds and under this mortgage there was sold during the year \$22,459,500, series A, 6 per cent bonds. With the proceeds \$6,000,000 5 per cent notes, due March 1, 1916, were paid off, \$1,700,000 refunding mortgage bonds were purchased and pledged under the new mortgage, \$5,725,000 underlying first mortgage 6 per cent bonds of the Carolina, Atlantic & Western were purchased and retired, and the treasury was reimbursed for expenditures for additions and betterments. At the end of the year the company had on hand \$3,452,000 cash, with \$942,000 special deposits against matured interest and dividends. There were no loans and bills payable except \$63,000 which nominally came under this head, and during the year the company had spent \$1,519,000 for additions and betterments to road.

The following table shows the principal figures for operation in 1916 as compared with 1915:

	1916	1915
Average mileage operated.....	3,449	3,334
Freight revenue	\$16,982,313	\$14,681,060
Passenger revenue	5,032,431	4,686,885
Total operating revenue.....	24,494,789	21,781,316
Maintenance of way and structures..	2,924,293	2,493,957
Maintenance of equipment.....	3,496,061	3,207,117
Traffic expenses	825,213	776,468
Transportation expenses	8,190,507	7,964,482
General expenses	758,433	733,772
Total operating expenses	16,332,546	15,287,552
Taxes	1,170,826	1,090,947
Operating income	6,983,151	5,393,915
Gross income	7,411,725	5,752,676
*Net income	1,269,978	15,046
Annual alctment of discount on se- curities	309,548	315,443
Surplus	960,431	\$300,398

*After deducting interest on the adjustment mortgage bonds. †Deficit.

NEW BOOKS

Passenger Terminals and Trains. By John A. Droege. 410 pages, profusely illustrated. 6 in. x 9½ in. Bound in cloth. Published by McGraw-Hill Book Company, 239 West 39th street, New York. Price, \$5 net.

This book scarcely needs an introduction. Its author, general superintendent of the New York, New Haven & Hartford, at New Haven, Conn., is already well known through his former book "Freight Terminals and Trains." This is a companion book to that one. A mere reading of the titles of the 22 chapters conveys to the reader a good idea of the unsuspected range of matter included in the subject, and of the variety of viewpoints from which it should be considered. These titles include, besides those which are obvious, Interlocking and Approaches; Through or Side Stations; Waterfront Terminals; Trackage Agreements; Car Cleaning Plants; Passenger Trains and Terminals of Foreign Countries; Electrification; The Commissary; Statistics of Passenger Service.

This is a very interesting book. It is practical on every page, theories and opinions being constantly backed up by facts. Its chief fault is that it is too rich; the reader constantly reads pages full of more facts than he feels like digesting. Perhaps, however, this is not a fault; but the reader would have been helped by the introduction of more sub-titles or side heads, breaking up long chapters. On certain details the author might be criticised for a fault very common among railroad officers who write—the use of too mild language. Toilet rooms and station facilities generally could be treated more vigorously; good management should be praised and bad management should be denounced in a more incisive style—and the author of a book has such a fine opportunity! On page 189 the author forgot to denounce the train caller who never makes people understand what he says; and missed his chance to praise the man who can announce trains in a large room clearly. However, there are in the United States so few of these last mentioned that perhaps Mr. Droege never saw one!

But these criticisms are as the small dust in the balance. The main idea of the book—the careful compilation of thousands of useful and interesting facts and the avoidance of the error of flying off into theories and making only a literary essay—affords the reader constant satisfaction. A book so full of authentic statements of facts, by a man who has such a rich experience of his own and such a careful, judicial and industrious mind to gather the experiences of others, is a very unusual production.

Frankness is one of the prominent merits of the book. The criticisms of individual stations by name show the spirit of the author; show that he writes for the benefit of the reader, not for any lower purpose. The quotation of a general passenger agent's opinion of dining cars, page 373, and other like passages, show that the author is up-to-date. The photographic illustrations alone will sell the book to many persons. Every interesting large station, apparently, has been pictured, and with discrimination and taste. The photographic engravings as a whole produce a large and striking variety—and in this feature no one objects to richness.

This book seems to be addressed to the "general reader," and that is well; thousands of people who get their reading in public libraries ought to go through it with care; but its popular character is no detriment, and it will be wanted in every railroad officer's library. Much of the matter, especially some of the discussions, will be of little interest to anybody except railroad men as, for example, that on Rule 99—in which, by the way, the author, with the skill of a German diplomat, has avoided any danger of being torpedoed by the enemy.

The book has a good index which, however, would have been more satisfactory if the illustrated articles had been distinguished from those not illustrated.

Letters to the Editor

BITING SARCASM FROM C. THORNE

DES MOINES, Ia.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

My attention has been called to an editorial in your issue of November 24, in which you agree with me that the state commissions have had a low batting average, and you make the wise suggestion that, instead of roasting the umpire, possibly some of the state legislatures and commissions would improve their batting average by practicing a higher swing at the ball.

I gently suggest to your most wise understanding that if there is a grain of common sense that has any room amidst all the profound learning and wisdom with which your brain is burdened, that it might occur to you when there is a difference of opinion between parties, commissions or baseball teams, it might be well to have some other person act as umpire than one of the parties to the difference. I am sorry it seems to require a sledge hammer to drive home the proposition.

C. THORNE,

Chairman, Railroad Commission of Iowa.

A DESPATCHER ON THE EIGHT-HOUR DAY.

HAILEYVILLE, Okla.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

With the eight-hour day for trainmen and enginemen the item of overtime will be of increased importance and the despatcher will be looked to to do his share toward keeping expenses down. But we shall be working under the same conditions then as we are now; shall we receive credit for the difference? On single track there is bound to be delay in meeting trains, but the telegraph offices will be just as far apart, maybe farther. The train-men and enginemen will not be so eager to get over the road in eight hours as they were prior to September 1, when they were trying to show the managements that they could do it in that time (and some of them did). However, with the eight-hour day it will be extremely easy to make a couple of hours overtime, and then say in reply that it required that long to get over the road two years ago, etc.

On some lines the management lays down the rule that despatchers must keep twenty minutes off the time of passenger trains, in so far as concerns the assisting other trains; in other words, the passenger train must be twenty-five minutes late before we can use five minutes. It can readily be seen that this simply kills trains of an inferior class. When operating under an eight-hour day it will not take long for the eight hours to run out if there are many passenger trains to meet and let by. Another handicap will be on Sundays and holidays, where the operators at one-man stations only work three hours a day. And the trainmen and enginemen never fail to take advantage of the time to eat, regardless of what is going on. Should the eight-hour day become effective the company will receive about seven hours' service, for they will find an opportunity to eat twice on the trip, provided there is no improvement on the way that the matter is handled now.

J. L. Coss.

THE DIARY OF OUR OWN SAMUEL PEPYS.—Dec. 6: To the office early, and all day at my many tasks again; one of the greatest of them trying to find out, by telephoning, whether it is the Pennsylvania Terminal or the Pennsylvania Station; and learning, after having the young ladies bid me to wait a minute, please, that it is the later.—*F. P. A. in N. Y. Tribune.*

Is Intercolonial's Failure Due to Low Rates?

Further Analysis Affords Additional Evidence That
Its Losses Have Been Due Mainly to Its Management

By Francis A. Bonner

Associate Director, Bureau of Railway News and Statistics

ONE may well doubt if there could arise in behalf of the government owned and operated Intercolonial Railway of Canada a more sincere and devoted champion than J. L. Payne, comptroller of statistics of the Canadian Department of Railways and Canals, shows himself to be in his argument appearing in the *Railway Age Gazette* of October 6. Mr. Payne, in the expressed purpose of his reply to Mr. Dunn's analysis of the Intercolonial's unbroken record as a financial failure, sets before himself three undertakings: "First, to present the true story of the Intercolonial Railway; second, to show that the experience of the Intercolonial cannot properly be taken as demonstrating either the success or failure of government ownership; and, third, to correct some of Mr. Dunn's assumptions and deductions which were manifestly based upon imperfect or misleading information." The historical facts reviewed, regarding political causes which produced the Intercolonial and considerations of Empire which resulted in its location, effectively dispose of all thought that the railway's projectors and builders ever harbored a notion that its ability to walk financially without a perambulator was a requisite.

As the keystone in his defense of the Intercolonial, however, as the outstanding reason for its financial insolvency, Mr. Payne urges the low level of rates charged upon its traffic. This factor was set forth also by Mr. Dunn, who estimated that probably one-third of the Intercolonial's losses might be attributed to low rates. Mr. Payne sets vital importance upon this one factor, for he says:

"The point I desire now to establish—and it is the kernel of this whole matter—is that the Intercolonial has not paid, in the commercial sense, simply and solely because its freight and passenger rates have been too low. If I fail to prove this contention I shall be left without a vestige of excuse for writing this reply to Mr. Dunn."

It will be hardly unfair to assume Mr. Payne's meaning to be that these low rates of the Intercolonial arise from a deliberate policy; for he goes on to consider the reasons actuating against an advance in rates "up to the Canadian Pacific level"; chiefly that it would be a flagrant breach of faith and that the Maritime Provinces protest against any idea of their railways paying interest out of transportation charges while Quebec and Ontario receive their canals interest-free. The only uncontrollable factor advanced, water competition, he finds should not be given undue importance. Proponents of ownership and operation of railways by the state invariably advance as an argument that public railways would consider first promotion of social progress through reductions in rates; and if application of such policy is the source of the Intercolonial's low rates and financial failure, advocates of state operation may still find some consolation in the performance of the railway. Mr. Payne builds upon these low rates the structure of his defense of the Intercolonial's performance. In so far, then, as their reality may be questioned the defense is weakened and other causes must be sought for the railway's failure to meet operating expenses than the deliberate granting of unremunerative rates.

A journey which the writer has just had the pleasure of making over nearly every mile of the Intercolonial system, extending from Quebec to Sydney, Cape Breton, and back to Halifax, gives rise to a belief that the reality of these

low rates may seriously be questioned; that they are, first, in part fallacious; second, in part due to reasons germane to those which give the Virginian Railway, for instance, one of the most efficient of our own private railways, (operating as it does on a ratio of expenses to revenues of only 55.7 per cent) an "average freight rate" of only 3.4 mills per ton mile—about half the low rate cited as justification for the Intercolonial's ruinous operating ratio of 100.8 per cent.

AVERAGE PASSENGER REVENUE VERSUS ACTUAL RATES

It is true that the "average revenues" of the Intercolonial, whether per passenger-mile or per ton-mile, compared with those of either Canadian railways as a whole or the Canadian Pacific in particular—with which highly prosperous private railway Mr. Payne is bold enough to compare the achievements of the Intercolonial—are low. The Intercolonial's average per passenger mile in 1915, according to the official Railway Statistics of the Dominion of Canada, was 1.824 cents against 2.021 cents for all Canadian roads, and 2.071 cents for the Canadian Pacific. Its "average freight rate" was .616 cent per ton-mile against .751 for all railways and .772 for the Canadian Pacific. It seems reasonable at first glance, therefore, to accept the view that the government's rates are far lower than those of its competitors and that if, as Mr. Payne urges, the Intercolonial and Canadian Pacific were to "swap" rates the state road would be in affluence and the Canadian Pacific on the ragged edge of failure.

The defense, however, is based upon a confusion of average rates and average revenues, so often loosely termed average rates. The rates a railway charges are the actual quotations provided in its tariffs; the average revenue per ton or passenger-mile is merely the result of a division of passenger or ton-miles into passenger or freight revenues. The two may be far apart. United States railways operating in states where a strict application of the 2 cent per mile fare is adhered to will inevitably show an average revenue per passenger-mile a fraction under 2 cents. One of the most important reasons is competition with short line mileages. No road can well be the shortest line between every two points it in common with other roads connects. The shorter line in each case must, of course, set the fare upon its own mileage; the longer road must perforce meet the rate upon its longer mileage or give up the business. This has a particularly vital effect on the Intercolonial Railway of Canada. Between Montreal and St. John, N. B., it charges a first class limited one way fare of \$14.30. Between the same two very important centers of traffic operates the Canadian Pacific. One looking for evidence of the social betterment application of government railway rates might receive his first jolt upon learning that the Canadian Pacific charges the selfsame rate. It could not, of course, be otherwise. Both must charge alike or one will get all the traffic. Now, the Canadian Pacific hauls its passenger 483 miles in performing the service of transporting him from Montreal to St. John; it has received, consequently, 2.96 cents per passenger-mile. The Intercolonial, on the other hand, has to haul its passenger 740 miles between the same two points and receives, consequently, only 1.93 cents per passenger mile.

Likewise, from Montreal to Moncton, N. B., the fare by either road is \$14.30, first class, limited, one way. The Canadian Pacific performs the service (partly over the Intercolonial's own rails) in 572 miles, receiving 2.50 cents

per mile; the Intercolonial, to earn the same fare, has to cover 651 miles and receives therefore only 2.19 cents per mile. From Montreal to Halifax either road charges \$18.45, first class, limited, one way. The Canadian Pacific, again partly over the Intercolonial's own lines, covers the journey in 758 miles at 2.43 cents per mile, while the Intercolonial consumes 836 miles at 2.21 cents per mile. From Sydney to Halifax, where there is no short line competition, it is interesting to see the fare for the 286 miles rise to \$7.55, or 2.64 cents per mile.

Not any applied theory of a state railway's obligations to the public has caused these lower averages via the state railway, but the stern force of competition, from which there is no appeal. Government roads, like private, must meet rates to competing points and where there is disproportion in mileage the longer road must suffer. Travel in the Intercolonial territory gives an impression that a large part of its traffic consists of long haul business between Montreal or Quebec and the important centers of the Maritime Provinces, to which rates must be set via the shorter competing mileage of the Canadian Pacific. This, then, must be a powerful factor in pulling down the government railway's "average rates," thus to term loosely what is really *average revenue*. Such a conclusion is strengthened by a comparison of local fares not subject to competition. I have taken at random specific journeys local to the Intercolonial and compared them with random journeys of about the same mileage, local to the Canadian Pacific, with the following results:

Road	Journey	Miles	First class pass. fare	Avg. per mile
Int....	Riviere du Loup, Que.—Trois Pistoles, Que...	27	\$0.85	3.15c
C. P. R.	St. John, N. B.—Welsford, N. B.....	24	.80	3.33c
Int....	Campbellton, N. B.—Petit Rocher, N. B.....	51	1.60	3.14c
C. P. R.	Greenville Jct., Me.—Holeb, Me.....	53	1.60	3.02c
Int....	Riviere du Loup, Que.—Mont Joli, Que.....	83	2.55	3.07c
C. P. R.	St. John, N. B.—McAdam Jct., N. B.....	85	2.60	3.06c
Int....	Mont Joli, Que.—Campbellton, N. B.....	105	3.15	3.00c
D. A. R. *	Halifax, N. S.—Lawrencetown, N. S.....	108	3.25	3.01c
Int....	Campbellton, N. B.—New Castle, N. B.....	107	3.25	3.04c
C. P. R.	Sherbrooke, Que.—Montreal	107	3.20	2.99c

* Dominion Atlantic, controlled by Canadian Pacific.

First class rates in these instances are seen to hug 3 cents per mile for either railroad, in some instances the average figuring a bit higher for the government than for the private line. This similarity is not exceptional. Investigation discloses that first class fares on the Canadian Pacific in all territory east of Calgary, MacLeod and Edmonton generally speaking are 3 cents per mile, excepting only the line between Mattawamkeag and Vanceboro, Me., (territory competing with the Intercolonial) where, running over the Maine Central tracks, the Maine Central fares of 2½ cents are used. Turning now to the Intercolonial we find a flat mileage tariff in existence quoting 3 cents or more per mile, first class, on local distances. This tariff quotes 1 mile, 5 cents; 2 to 3 miles, 10 cents; 4 to 5 miles, 15 cents; 6 miles, 20 cents; 7 to 8 miles, 25 cents; 9 to 10 miles, 30 cents. Thence up to 200 miles the rate remains 3 cents per mile, as seen from the following examples:

Miles	First class fare	Miles	First class fare
15.....	\$0.45	40.....	\$1.20
20.....	.60	50.....	1.50
25.....	.75	100.....	3.00
30.....	.90	200.....	6.00

Beginning with 200 miles, there is a slight reduction which brings 300 miles to \$8.10; 400 to \$10.00; 500 to \$12.00 and 1,000, the extreme quoted, to \$22.00.

Low rates applied for political purposes or those of social betterment are a plausible, even if specious and deceptive, justification to poor financial showings of government railways; in the case of the Intercolonial's first class passenger fares, however, they do not seem to exist. If we turn to second class fares the government road does make a showing, although even the second class fares are based on a flat mileage tariff which up to 200 miles quotes 2 cents per mile, the rate fixed by law for first class travel in 11 states of the

United States. Beyond two hundred miles there are again slight reductions bringing 300 miles to \$5.40; 400 to \$6.70; 500 to \$8.00 and 1,000 to \$14.70. Second class fares locally on the Canadian Pacific run from 2 cents to 2 2/3 cents per mile. Mark the effect, however, where competition enters: the Intercolonial charges \$10.00 for the 740 mile journey second class Montreal to St. John, or 1.35 cents per mile; the Canadian Pacific meets the rate of \$10.00, but as the distance is only 483 miles the average is 2.07 cents per mile. Where rates are competitive the two must charge the same second class as well as first and the Intercolonial, by reason of its tremendous haul, must work on its smaller per mile receipt. Where rates are purely local the Intercolonial's second class fares do seem to be slightly under the Canadian Pacific's. If, as in Europe, travel on the Intercolonial were overwhelmingly second class or poorer, this would have an important effect on the average passenger revenues. I find no data in the official Canadian report dividing second from first class passenger statistics. But as the Intercolonial has only 33 second class coaches against 140 first class, 8 parlor cars and 48 sleeping cars—196 cars in all carrying first class travel—it seems unlikely that second class travel preponderates. In Germany, where the low average passenger mile revenue results from a preponderance of low class travel, there are by contrast only 147 first class coaches against 3,705 second, 29,326 third and 17,563 fourth class.

HOW ABOUT THE FREIGHT RATES?

A more complex situation confronts one in the freight department. Intricate variations in character of territory reflected in currents of traffic; in peculiarities of production and consumption of materials; in differing necessities as to quotation of through or local, joint or reshipping rates and in other multitudinous factors affecting rate making, render it extremely difficult to find a common ground upon which to compare charges for hauling similar materials similar distances under similar conditions. Perhaps the most clear-cut comparison may be made in the province of merchandise moving under class rates. Here there are definite tariffs quoting a definite price for hauling closely classified articles a defined distance. The comparison is striking, for both railways quote absolutely the same figures. The following specimen rates are indifferently those per 100 pounds on either Intercolonial or Canadian Pacific:

Class	CLASS FREIGHT MILEAGE TARIFF.					
	10 miles	25 miles	50 miles	75 miles	100 miles	St. John to Montreal
1.....	\$0.10	\$0.16	\$0.24	\$0.30	\$0.36	\$0.54
2.....	.08	.14	.21	.26	.32	.47
3.....	.07	.12	.18	.23	.27	.41
4.....	.06	.10	.15	.19	.23	.34
5.....	.05	.08	.12	.15	.18	.27
6.....	.05	.07	.11	.14	.16	.25
7.....	.04	.06	.09	.12	.13	.20
8.....	.04	.07	.10	.12	.14	.21
9.....	.04	.07	.09	.11	.13	.23
10.....	.04	.05	.07	.10	.11	.18

Again we find where shipments are purely local the two railways ask the same per mile; where rates are competitive they ask the same for the service and again the Intercolonial per mile revenue suffers. From St. John to Montreal, at 54c per 100 pounds, it receives for first class freight an average of only 1.46c per mile, whereas the Canadian Pacific, also at 54c a hundred, receives 2.24c per ton mile.

It is in commodity rates that the variations of traffic conditions enter most seriously to impede comparisons upon equal ground; it may be significant, however, that on bituminous and anthracite coal, by far the largest factor in the Intercolonial freight tonnage, both roads quote exactly alike at the following rates per 100 pounds:

Miles	10	25	50	75	100
Cents	2.5	3.5	4.5	5.5	6.0

On lumber, another important Intercolonial commodity, the Intercolonial is slightly under the Canadian Pacific; on live stock it is equal on short distances and higher on long. In all cases, however, it is important to remember that one

road meets the other's rate at competitive points, with the now familiar effect on the Intercolonial's average receipt per ton mile.

This leads to another important consideration—namely, the character of the freight; for it is elementary that a railway's average revenues per ton mile will vary as the preponderance of high or low class traffic. As stated already, the Virginian Railway of the United States has an average revenue of only 3.4 mills per ton mile. The reason is—coal. Now, one who has passed through the region about New Glasgow, Nova Scotia, would expect the Intercolonial to show a large coal tonnage. The proportion is, in fact, larger than expected. Of 4,442,510 tons comprising all freight in 1915, bituminous coal represented 955,556 tons, or 21.5 per cent. The Canadian Pacific's proportion of bituminous coal was 9.2 per cent. Including anthracite, the Intercolonial's proportion of coal was 22.8 per cent, against the Canadian Pacific's 14.1. Lumber, another low rate commodity, made up 15.0 per cent of the Intercolonial's freight, against 7.9 per cent of the Canadian Pacific's. Grain, a higher rated commodity, on the other hand, made up only 2.98 per cent of the Intercolonial's tonnage, against 15.4 per cent of the Canadian Pacific's; while the government railway's proportion of merchandise, the highest rated freight, was only 4.1 per cent, against 7.5 per cent on the Canadian Pacific.

Such a marked difference in character of traffic cannot fail to be a powerful factor in giving the Intercolonial a lower average freight revenue per ton mile. It is, however, no excuse for the poor financial showing. The Virginian, with all its low average, operates on a 55.7 per cent ratio of expense to revenue. Many an executive on roads of high class freights would welcome a change to the Virginian's average revenue, if he could likewise secure the same opportunities for heavy loading of a steady commodity like coal.

Taken all in all, the Intercolonial's tariffs do not seem to bear out any hypothesis that low rates arising from political considerations or social betterment theories of government ownership are a reason for its failures. Mr. Payne, evidently inferring that such a magnanimity under public ownership is the reason, asks: "If low rates account wholly for the poor operating results by the Intercolonial, why does the government not raise them up to the Canadian Pacific level?" The reasons, he says, are that (1) the Maritime Provinces believe it was part of the original agreement that the road should never produce more than operating expenses; (2) that it would be a breach of faith to attempt to earn interest on cost; (3) water competition, which, however, he says should not be given "undue importance"; (4) Ontario and Quebec get their canals interest free and New Brunswick and Nova Scotia demand their railways interest free in like manner. It is their own look-out, to be sure, if they prefer to fool themselves and pay the interest in form of taxes, when with rates sufficient to pay interest outsiders traveling or shipping could be made to bear their part of the cost. But a real reason why rates are not advanced "to the Canadian Pacific level" would seem to be that they already are there; that 3 cents a mile first class and 2 cents a mile second class is already enough for passenger travel on a road hauling practically the same number of passengers per train as United States railways and more than the average of Canadian railways; that to give the Intercolonial with its long mileage an *average revenue per ton or passenger mile* equal to the Canadian Pacific's the actual rates would have to be much higher than the latter's—which on competitive business would be impossible.

Mr. Payne shows the real splendor of the Intercolonial's achievement by changing shoes to the other feet. He gives the Canadian Pacific the Intercolonial's "average rates" and vice versa to show that under these exchanged conditions the Intercolonial would be rolling up a large surplus and the

Canadian Pacific verging on bankruptcy. "Is there anything specious or unfair in the foregoing comparison?" he asks. I submit that it requires only recollection of the essential difference between "average revenues" and actual "average rates" to disclose a very serious fault. Average revenue per passenger mile, to repeat, is not a *rate* per mile, but the quotient of passenger revenue divided by passenger miles. To apply the average or quotient of one road's division to the passenger miles, or divisor, of the other and accept the result as indicating what would be the result on the other, whose passenger miles bear no relation to this quotient, results in an erroneous outcome which grows ridiculous where there is great disparity in passenger or ton miles necessary to do a given service. A concrete case is clearer:

Between Montreal and St. John the two railways now work as follows:

	Miles	Fare	Per pass. mile
Intercolonial	740	\$14.30	1.93c
C. P. R.	483	14.30	2.96c

Give the Intercolonial the Canadian Pacific's "average rate," as the last column is incorrectly termed, and vice versa, and we have now:

Intercolonial	740 miles @ 2.96c	= \$21.90
C. P. R.	483 miles @ 1.93c	= 9.32

The high average which is the direct result of economic location of the second road is applied to the long mileage which is the very cause of the unprofitable average of the first, and vice versa. Hopeless, indeed, would be the railway which could not show up well in comparison with even the most prosperous on such an exchange.

AVERAGE RATES ON OTHER GOVERNMENT LINES

In great measure, therefore, the Intercolonial's low average revenue per traffic unit mile, so vital a factor in its failure, must be attributed first to running around Robin Hood's barn to get anywhere, and second, to the greater proportion of low grade traffic; and not to any policy of deliberate general rate concessions. This is strengthened by the averages of other private and government railways in Canada, where volition has freer play:

	Average revenue per Pass. mile Cents	Average revenue per Ton mile Cents
All railways	2.021	.751
Intercolonial	1.824	.616
Canadian Pacific	2.071	.772
Grand Trunk	1.753	.687
Prince Edward Island	1.822	3.892
National Transcontinental	2.412	1.092
New Brunswick Coal & Ry.	2.680	3.325
Temiskaming & Northern Ontario	2.339	1.025

The Grand Trunk's average per passenger mile is lower than the Intercolonial's. But far above either of the great private lines and (excepting the Prince Edward Island's passenger average) far above the freight or passenger averages for the entire country are those of the last four named, all government owned and operated. Yet all, save only the Temiskaming & Northern Ontario, failed in 1915 to make bare operating expenses. The one exception consumed for operating expenses over \$95 out of every \$100 received that year. They are all failures despite freedom from the handicap of "low rates" advanced by Mr. Payne for the Intercolonial.

Confining ourselves again to the Intercolonial, since its failure is due largely to low average revenues, and these largely due to uneconomic location, and that location due to military considerations, it may be partly true, as Mr. Payne says, that its failure in particular is lessened as an argument against efficiency of government operation. But another argument is proved. The moment public ownership enters there come in its train a host of followers—factional politics, log-rolling between representatives, concessions to local demands, the pork barrel; or, if you will, as in the Intercolonial's case, considerations of military strategy, to crowd overboard those cold scientific facts of economy unescapable,

in the settlement of administrative questions, for successful enterprise. The result is mismanagement, or, as in the Intercolonial's case, a road so poorly located as to be unprofitable. If in some instances national defense conflicts with economy, economy must be discarded; or if people are willing to hoodwink themselves into a delighted dream that because they are not paying interest charges out of rates they are getting the property free, while at the same time they joyfully pay their taxes with the other hand, it may be justifiable to discard economy. But if national and commercial needs are harmonious, and they generally are, it is ruinous self-deception to break the relentless laws. Impartial, judicial consideration of facts is and always must be foreign to management by popular democratic government, responsive to the selfish demands of sectionally selfish constituents.

As to service, like Mr. Dunn, I cannot subscribe to Mr. Payne's claim that "there is no better roadbed anywhere" and that the railway supplies an "unsurpassed service." From my own experience I should say that with the exception of the division from Campbellton to Moncton the roadbed, judged by its riding qualities, is rather under that of the average unpretentious railway of the United States, while in details of service it is not to be compared with our better railways.

THE RIGHT OF PUBLIC SERVICE EMPLOYEES TO STRIKE

The Economic Club of New York held its thirty-seventh quarterly dinner at the Hotel Astor on the evening of December 11. The question for discussion was, "Should the right to strike of public service employees be regulated by law?" Frank A. Vanderlip, president of the National City Bank and president of the club, presided and the speakers were Dr. Charles R. Van Hise, president of the University of Wisconsin, representing the point of view of the public; A. B. Garretson, president of the Order of Railway Conductors of America, representing the point of view of organized labor; and Elisha Lee, chairman of the National Conference Committee of Railways, representing the point of view of the railroad employers.

Dr. Van Hise said that he was in favor of the passage of an amendment to the Newlands law to prohibit a railroad strike until after investigation of the controversy and recommendations concerning its settlement, but he said that he did not believe that this would be a final settlement of the question and that a final solution would only be found in creating a wage commission either as a branch of the Interstate Commerce Commission or as an independent body.

A. B. Garretson said that industrial war was exactly like international war. By industrial war the American working man had fought his way up to his present position and he had suffered and died in making that fight just as soldiers die on the battlefields fighting for their country.

"Take away the laboring man's right to quit work," said Mr. Garretson, "and you might just as well enslave him." Mr. Garretson said that he heard a great deal about suffering which would be caused by a tying up of the transportation system of the United States, but that little, if any, of this talk came from laboring men or the laboring classes who would be the chief sufferers. This talk came largely, Mr. Garretson thought, from the employer class who feared a curtailment of profits. The laboring class was willing, Mr. Garretson said, to suffer,—and he did not make light of the extent of that suffering,—in the cause of bettering working conditions. Mr. Garretson said that unorganized labor was in sympathy with and supported organized labor because the unorganized laborers knew that the unions were fighting their battles for them. As to public opinion, Mr. Garretson said he knew of no place where it could be so well tested as at the polls, and the result of the recent election of

Mr. Wilson looked to him like emphatic public approval of the course Mr. Wilson had taken in preventing a railroad trainmen's strike.

In part Mr. Lee spoke as follows:

"When the private rights of the railroads have come into conflict with their public duties, the public, through the courts, has declared that public duties are greater than private rights. To the railroads the public says: 'You must operate continuously, under such regulations as we provide, and under such tariffs as we approve.'

"But to the two million of our citizens who are actually engaged in this public service—and without whom it could not be conducted—the public has neglected to issue any instructions. It has failed to mark the difference between the private rights and the public duties of the employees. The unfortunate controversy of last August brought vividly before the country the weakness of a system of public regulation of railroads, which fails to provide insurance against a paralysis of the internal commerce of the nation.

"The employees have a legal right to leave their posts on every mile of railroad in this country. Is not this unrestricted right of the railroad employees to quit work in a body a menace to the public welfare? Does not the individual who chooses to earn his livelihood in the public service of transportation assume a duty to help keep open these arteries of commerce, a duty greater than the private right to strike? During the recent wage controversy when it became apparent that the problem could not be settled across the conference table, we asked the train organizations to join with us in laying the whole dispute before the Interstate Commerce Commission. It may be that this will be the ultimate solution of the railroad wage problem—regulation of wages by the same Government commission that regulates rates. When it is considered that nearly two-thirds of the cost of railroad operation is the wage bill, it is seen how closely related are rates and wages. A ten per cent flat increase in the wages of all railroad employees is equivalent to a seven per cent increase in all freight rates. The demands for higher wages made by the train organizations (only one-sixth of the employees) were equivalent to a five per cent advance in freight rates. Wage demands of the same magnitude by all the employees would have been equivalent to a rate advance of 18 per cent.

"If the all-embracing commerce power under the constitution covers railroad wages as well as rates, then the way would be open for Congress to turn the whole problem of railroad wages over to the Interstate Commerce Commission.

"No matter what remedy is finally adopted by Congress for safeguarding the nation against the sudden interruption of interstate commerce, will it not fail of its purpose if it does not provide for a continuous oversight of railroad labor conditions by a permanent body of expert commissioners—men of the same high attainments and integrity as the members of the Interstate Commerce Commission?

"We are at the parting of the ways. One path before us is a continuation of the system of unrestricted private wage bargaining that eventually leads to settlement by force. The other path is a restriction and regulation of private wage bargaining for the protection of the rights of the public—trial by jury instead of trial by brute force.

"I am not prepared to say that all wage problems on the railroads should be placed unreservedly in the control of a public commission, but I do believe that when a controversy between the managements and the men reaches a stage where the interests of the public are imperilled—that then there should be a peaceful settlement, a judicial settlement, that will conserve the public interest as well as the rights of the parties to the controversy, and if it is finally determined that any body of men be required in the public interest to subordinate their private rights to their public duties, it should be with the full understanding that their rights must be in every way safeguarded by the public."

Timber Decay and Its Growing Importance*

Character of the Organisms That Destroy Wood and the Preventive and Remedial Measures Which Overcome Them

By C. J. Humphrey

Forest Products Laboratory, Madison, Wis.

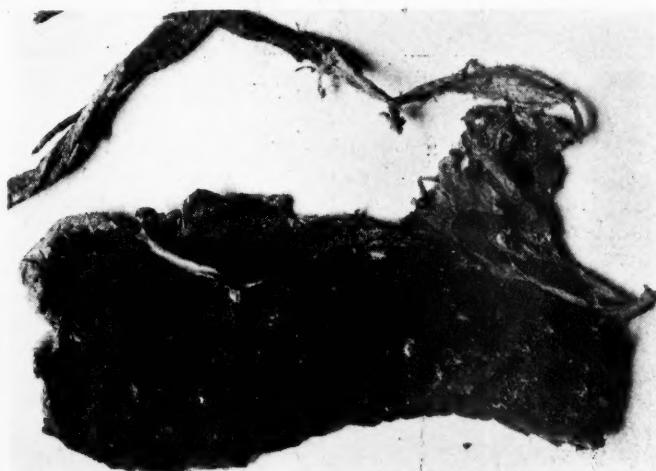
DEAY is due almost entirely to the growth of wood-destroying fungi within the tissues of the wood. There are many hundreds of different species of these which disintegrate wood in the forest, but the greater part of the economic losses in structural timber is referable to a comparatively small number. These fungi are plants just as much as are trees and herbs. They differ merely in their form, lack of green coloring matter and methods of nutrition. While green plants absorb their food supplies from the soil through their roots, fungi derive their nutriment from the substance of the wood.

In the life-cycle of a wood-destroying fungus there are two distinct stages: 1, the vegetative stage, consisting of thread-like, usually much branched, filaments, termed *mycelium*; 2, the fruiting stage, which is nothing more than a

"dry rot" fungi it appears to be more a question of the ability of the organisms to tolerate dry conditions, or to produce their own moisture from the wood, than any essential need for such conditions, for observations and laboratory tests demonstrate that an increase in the moisture under such circumstances leads to more rapid decay.

The need for at least a certain minimum of water is well shown under practical conditions. The points of failure in ordinary dry buildings are the points at which a little extra water is brought to, or held within, the timbers; for example, the ends of joists or girders set in brick or concrete walls, outer window casings, wood surrounding water pipes which may sweat or occasionally burst, porch floors and ceilings and other exposed trimmings where atmospheric moisture may collect at the joints, and last and often most important, basement timbers, either in contact with, or close to moist soil.

Most people are familiar with the way in which posts and telephone poles rot at or near the ground line. Below the ground line the sapwood completely decays, while above the ground line a thin shell of dry hard outer wood remains,



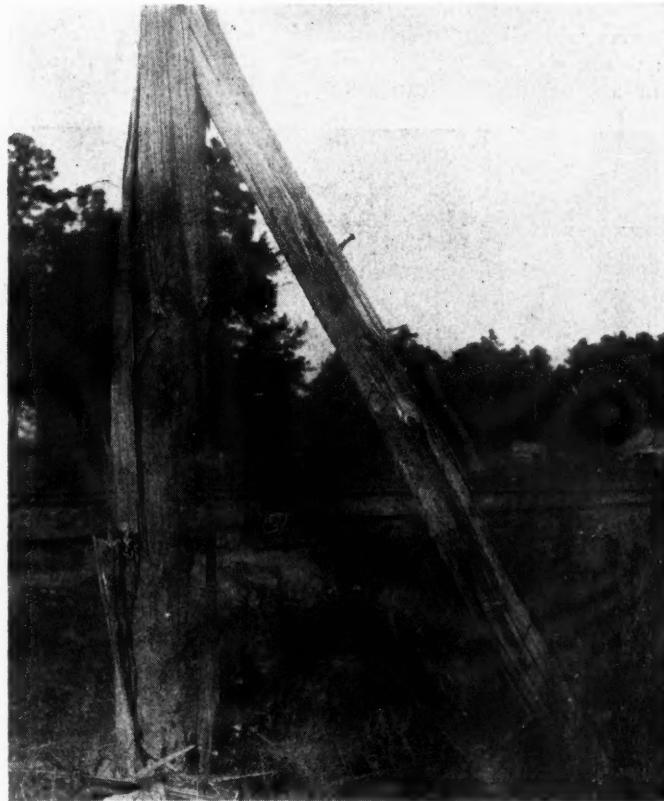
Fruiting Stage of Dry Rot Fungus

compact mass of mycelium which takes on a definite form on the surface of the decaying timbers and serves for the production of spores and, hence, the propagation of the species.

The mycelium is usually confined within the wood substance, the fine cotton-like filaments ramifying throughout the tissues and filling the pores of the wood and the cells of the pith rays, as well as boring through the walls of the wood elements. Sapwood is in most cases more susceptible to decay than heartwood because it contains a greater amount of the more easily digested compounds and, unlike the heartwood in many kinds of timber, is not infiltrated with compounds which in themselves retard the growth of the organisms.

CONDITIONS ESSENTIAL FOR GROWTH

In addition to available food supplies fungi require certain essential conditions for their development. These are sufficient moisture, at least a small amount of air within the wood and a suitable temperature. A suitable amount of moisture is, without doubt, the most important factor in decay. Certain ones classified as "dry rot" organisms seem to get along on a comparatively small amount, while others thrive only in highly humid surroundings. In the case of



Pole Rotted Entirely to the Top

with the decay running up beneath it. This is entirely a result of moisture conditions. The same phenomenon often occurs in water tank staves where the outer face is too dry, and the inner face too wet, to decay, while an intermediate zone may completely disintegrate.

A certain amount of air within the wood is absolutely necessary for decay. The organisms need it for their growth.

*Abstracted from a paper presented before the Western Society of Engineers, at Chicago, on November 13, 1916.

In saturated wood the air is, for the most part, displaced by water and fungous growth is impossible. The very widespread idea that decay is due to alternate wet and dry conditions has developed through observation of the way timbers behave when exposed to the elements. Take, for instance, a railway tie partly embedded in soil. During a dry season it may dry out to such an extent that decay is very slow, then come the rains, and if only sufficient water falls to put the tie in a good moisture condition it begins to rot rapidly again, and will continue to do so as long as the moisture and temperature are favorable. If, on the other hand, there is a long-continued rainy period the tie may soon become saturated and decay will stop again and remain practically at a standstill until the stick dries out sufficiently to admit the necessary amount of air. Thus, in the alternation of wet and dry conditions, one gets at some point intermediate between the dry and wet ranges a condition at which decay is at its maximum.

The third essential condition for rapid fungous growth is a suitable temperature. For the majority of species the most favorable temperature lies between 75 and 85 deg. F. There are some exceptions to this, however, in the case of certain of our very destructive fungi. Of a series of some 50 species which we have tested in our laboratory none would grow above 118 deg. F. However, this does not necessarily mean that they would be quickly killed at this temperature.

In general, wood-destroying fungi are much less tolerant of high temperatures than low ones, while temperatures slightly above the freezing point will usually permit some growth. In fact, the writer stored a large number of stock cultures of different fungi in an ice box where the temperatures vary around 40 to 60 deg. F. Under these conditions several fungi isolated from building timbers grew luxuriantly. The fact that all the species of fungi occurring naturally in a given locality can withstand the most severe winter

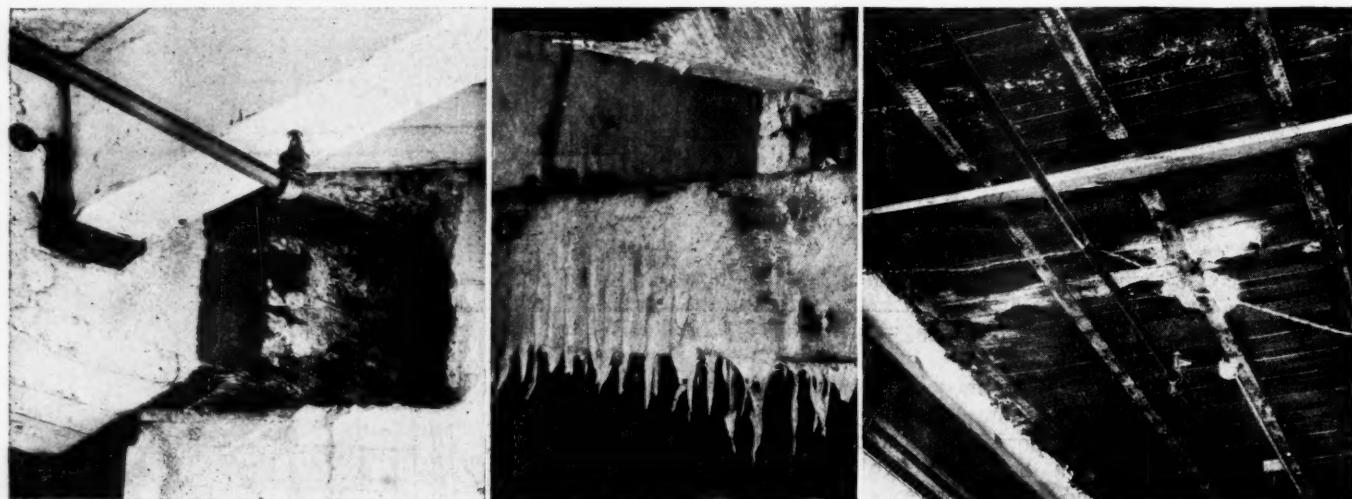
been kept in a warm dry room for a period of four years.

The second stage in the life-cycle of a wood-destroying fungus consists in brackets or shelves, "toadstools," or often only compact incrustations which appear on the surface of the timber after decay has become well started. Their function is to produce spores, which are comparable to the seeds of ordinary green plants. Being very minute (finer than



Unsanitary Saw Mill Yard

flour) these spores are readily carried about by air currents and lodging on the surface of moist timber, at a favorable temperature, germinate to produce new infections. The number of spores produced is beyond the ordinary comprehension. According to Professor Buller's studies on *Polyporus*



End of Douglas Fir Girder Embedded in Concrete Completely Rotted in 4½ Years. Mycelium Growing on Girders in a Basement. Severe Rot in Laminated Floor Laid Green and Covered with Plaster

weather shows their extreme hardness to low temperatures. While growth may be almost completely suspended under these circumstances the organisms will normally recover their growth capacity soon after being placed under more favorable conditions.

Mycelium in wood is often very long-lived in timber dried in the air at moderate temperatures. Once it gets well distributed throughout the wood, it is doubtful, in very many cases, whether the wood can again become free of infection as a result of natural atmospheric conditions. One case on record shows that a stick infected with one of our common species contained very vigorous mycelium after having

porus aquamosus the number of spores produced by a single specimen of this fungus may in the course of a year be "some fifty times the population of the globe."

A large part of the infection of timbers in the open occurs through the agency of these spores, but in buildings, where fruit-bodies are less likely to develop, they play a less important role.

DECAY IN BUILDING TIMBERS

The principal causes for decay fall, roughly, under the six following heads:

1—Placing non-durable timber in moist, ill-ventilated

basements or enclosures beneath the first floor, or laying sills in direct contact with the ground.

2—Embedding girders and joists in brick or concrete without boxing the ends.

3—Placing laminated flooring in unheated buildings in a green or wet condition.

4—Covering girders, posts, or laminated flooring with plaster or similar coating before being thoroughly dried.

5—General use of non-durable grades of timber in a green or only partially seasoned condition.

6—Use of even dry timber of low natural durability in buildings artificially humidified to a high degree, as in textile mills.

A further element of danger lies in the use of timber infected during storage or which has become infected through neglect after purchase and delivery.

There seems to be some divergence of opinion regarding the use of laminated flooring. In many buildings it has proven completely satisfactory. In others it has given very poor service. All the complaints investigated by the writer have shown the trouble to be due to the use of wet material. This, at best, dries very slowly in an unheated building. Covering such timber with plaster, or any other heavy coating, when moist will almost invariably cause trouble. If difficulties with laminated flooring are to be avoided the timbers will have to be thoroughly air seasoned and kept dry during construction.

This leads us to a consideration of the advisability of covering materials in mill-constructed buildings. A number of cases already investigated indicate clearly that the practice should not be recommended except with extreme caution, and a close knowledge of the condition of the timber as it goes into the building. A building was erected about 3 years ago, in which the construction was under way throughout the winter, so that the timbers were subject to periodic wetting from rains and snow, the timbers being for the most part, of poor quality, low density, mostly rapid growth, very knotty, and often with a large proportion of sapwood. Laminated floors of mixed quality, usually sappy and wide-ringed southern pine, scant 3 in. by 6 in. in size, were laid throughout the building, with the ends resting directly on the girders, with about a 5-in. bearing. The ceiling, girders, and posts were all encased in plaster board, leaving a narrow air space between the board and timbers.

This combination of circumstances—low quality timber, high moisture content, and plaster board covering—caused the timber to rot rapidly, particularly at the bearings of the laminated floor on the girders.

HOW TO CONTROL DECAY

The possibility that timber may reach the consumer with infection already in it is by no means remote. Many lumber yards are in a highly unsanitary condition as regards the presence of destructive fungi. For this reason the material should be carefully inspected and all pieces bearing incipient rot rejected. Likewise, it may prove advisable to inspect the yard where the purchase is made. Upon delivery of the material it should not be thrown about on the ground, but should be carefully placed on skids and kept dry. The soil is often a prolific source of infection.

Such timbers as are to be placed in situations favorable to decay should either be select grades of naturally durable stock or else treated with a good wood preservative. Neither non-durable timber or sapwood is objectionable when used in a dry condition and kept dry. Hence, every effort should be made during construction to keep moisture away from the timbers, and especially the joints.

Moist timbers should never be cased in, nor should timber of any sort be embedded in concrete or brick walls without boxing. In all cases thorough ventilation of moist stagnant basements should be provided.

Whenever timbers begin to fail, the need of a thorough

inspection of the building is indicated. If poor ventilation is the cause, the building should be opened up to secure rapid drying of the timbers. At the same time tests should be made to determine whether the wood contains living fungi. It is also important to know what species the fungus is, as further control measures may hinge on its identity. For instance, the true dry-rot fungus, *Merulius lachrymans*, being a low-temperature organism, can be controlled by the application of heat, while such a procedure would be useless with most other species. Some fungi may prove susceptible to a certain amount of drying, where others would not.

Where serious and active decay exists, without the exact method of control being indicated, the timbers should be carefully removed and replaced with select durable stock or with lower grade material treated with antiseptics. Likewise all incipient infection which appears in timbers which it is not considered necessary to remove should be given two or three applications of a wood preservative. Either a hot 3 to 4 per cent water solution of sodium fluoride or a cold 1 per cent alcoholic solution of mercuric chloride is well suited to interior timbers. Exterior timbers, where odor and color are not objectionable, can be satisfactorily treated with a good grade of hot coal tar creosote.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., December 13, 1916.

OUTLOOK FOR RAILROAD LEGISLATION IN CONGRESS

The decision of the Newlands Joint Committee on Interstate Commerce to suspend its hearings for the present and to ask Congress for an extension of time before continuing its investigation into the question of transportation regulation and control leaves the program recommended by President Wilson in his address to Congress last week as the principal work before Congress in the way of railroad legislation for this session. As it is understood that the President intends to insist on his program being carried out and as Congress has already laid out for itself more work than it can probably accomplish in the short session, the decision to postpone the Newlands investigation seems practically necessary, as the members of the committee are members of the committees in the House and the Senate that will have to handle the bills proposed by the President. The House Committee on Interstate and Foreign Commerce held a meeting on Friday to consider its plans for the session, but temporarily postponed consideration of the President's proposals. The Senate Committee on Interstate Commerce also had a meeting and decided that it will probably hold public hearings, at which representatives of the railroads, the employees and all of the business interests will be asked to present their views.

That there is to be great difficulty in securing the passage of a law to prohibit strikes pending a public investigation is indicated by interviews with a number of the prominent members of Congress opposing the President's plan. It is reported that congressional action on this subject may await the result of the efforts which the labor leaders say they are making to draft a substitute plan which they propose to submit to the President and to the railroads.

No bills to carry out the President's recommendations have yet been introduced in Congress, but it is stated that the intention is to handle these proposals as amendments to the bill providing for the enlargement and reorganization of the Interstate Commerce Commission, which has already passed the House and is now before the Senate. Senator Underwood has introduced a bill to give the Interstate Commerce Commission the power to fix the hours of labor and determine wages for employees of carriers engaged in interstate commerce, which contains provisions similar to an amendment which he urged at the time of the passage of the Adamson law. Senator Townsend has also introduced a bill providing for the creation of a special commission to be ap-

pointed by the President in case of controversies affecting transportation to make an investigation and submit recommendations to the President. Senator Hardwick has also introduced a bill to amend the Adamson law, to give the Interstate Commerce Commission power to determine the hours and other conditions of labor for the employees affected by the act and making it unlawful for the employees to strike because of their dissatisfaction at any such decision of the Interstate Commerce Commission.

Unless it postpones consideration of labor legislation until the last minute Congress will not be able to be guided in its deliberations by what the Supreme Court decides as to the constitutionality of the Adamson law. The court on Monday granted the government's motion to expedite the test case instituted by the Missouri, Oklahoma & Gulf, in which Judge Hook held the law unconstitutional, and set the case for argument on January 8, ahead of other important cases, making it possible for the court to render a decision before Congress adjourns, but such an early decision is not certain.

PROPOSED CHANGES IN ACT TO REGULATE COMMERCE

Now that the Interstate Commerce Commission has come forward with recommendations for changes in the act to regulate commerce it is possible to compare in a general way the proposals to be advocated before the Newlands committee by both federal and state commissions, the railroads and the shippers, as well as by many other organizations. Although the railroads are the only interest that has yet laid definite plans before the committee, many of the resolutions adopted at the recent annual convention of the National Association of Railway Commissioners bear on the problems under consideration by the congressional committee, and the position of the state commissioners has been explained to the committee by Mr. Thelen, president of the association. The National Industrial Traffic League expressed its position toward the investigation in resolutions adopted at its recent annual convention. The Interstate Commerce Commission's recommendations in its annual report to Congress are probably to be followed by others to be presented to the Newlands committee.

As to the railroad proposal for exclusive federal regulation, the state commissioners are squarely opposed to it, the National Industrial Traffic League favors it "provided it can be accomplished in a way that will permit the same degree of protection and expedited attention to, and speedy determination of, wholly intrastate matters, as now obtains," and the Interstate Commerce Commission proposes a plan of legalized co-operation between the federal and state commissions. The league has endorsed the proposal for federal incorporation, as to which the Interstate Commerce Commission has announced no opinion. The attitude of the state commissions on this point has not been expressed, but is undoubtedly covered by their resolution on the rate question. The railroads, the shippers and the commissioners are all for federal regulation of security issues, although the railroads use the word "supervision," and some of the states want to retain their present powers. The railroads want the period during which rates may be suspended reduced from 10 months to 60 days, the Interstate Commerce Commission wants it increased to a year and the National Industrial Traffic League opposes any change in the present law respecting suspension. The railroads want the commission to have the power to prescribe minimum as well as maximum rates, the National Industrial Traffic League is opposed to this plan, and the Interstate Commerce Commission recommends that the rates existing as of a certain date be declared reasonable for the past and that no change be made except upon order of the commission.

The state commissioners agree with the railroads as to the desirability of regional commissions, while the league contents itself with endorsing the recommendations of the Inter-

state Commerce Commission that its membership be increased and that it be given authority to subdivide its work, provided not less than a majority of the commission shall pass upon questions arising between shippers and carriers.

The railroads want the commission's functions as a prosecutor turned over to the department of justice or some other agency of the federal government. The National Industrial Traffic League is opposed to any change in section 12, which apparently covers this point.

Both the state commissioners and the shippers ask that the shipper be given the same right to an appeal from negative orders of the Interstate Commerce Commission as from affirmative orders. The state commissioners and the Interstate Commerce Commission agree that the latter should have jurisdiction over matters pertaining to car interchange.

A large number of commercial and other organizations have announced their position on various proposals for change in present methods of regulation. The Railway Business Association, representing the railway supply manufacturers, has outlined a program which agrees in general with that of the railroads. The Investment Bankers' Association has endorsed the plan of federal regulation, as have many trade associations and commercial organizations of various kinds. The livestock shippers, on the other hand, are strongly opposed to a reduction of the power of the state commissions over rates.

CONGRESS HEARS FROM UNORGANIZED EMPLOYEES

Congress is beginning to hear from the railroad employees which it failed to take into consideration in September when it legislated an increase of wages for the train employees who were threatening it with a strike. It was briefly noted in last week's issue that a number of petitions were filed in Congress on the opening day's session by various representatives of the unorganized railway employees. A committee headed by Robert T. Frazier, Jr., of the engineering department of the Nashville, Chattanooga & St. Louis, and representing what has been termed the 80 per cent movement, called on Chairman Newlands of the Senate Committee on Interstate Commerce and presented a petition signed by 300,000 railway employees, not members of the brotherhoods, from 35 different states, asking that provision be made for thorough investigation by a duly appointed commission of the hours of service and wages of all railway employees. In a letter to Senator Newlands the committee stated that since Congress has taken upon itself the burden of regulating wages for some of the men engaged in the transportation service, it should likewise legislate equitably for all men so engaged.

Senator Gallinger, of New Hampshire, also presented a petition which he had received by mail signed by 51 railway employees on behalf of the employees in the maintenance of way department of American railways, numbering over 400,000 men, asking Congress to include these employees in the eight-hour law. The petition set forth the arduous character of the work of these employees, which they described as "of a most strenuous nature, rough, dirty and laborious and has to be performed often under most unfavorable conditions, in heat and cold, winter and summer, rain or shine."

POSTMASTER GENERAL TO ASK REDUCTION OF MAIL PAY RATES

The Interstate Commerce Commission is to be asked on January 1 by the postoffice department to reduce the rates paid to the railways for the transportation of mails, which were tentatively fixed by Congress in the last postoffice appropriation bill and which went into effect with the inauguration of the space basis of payment on November 1. This announcement is made in the annual report of Postmaster General Burleson to Congress, in which he says that the rates now in operation are excessive, but that under the law the department will on January 1 file with the commission

its comprehensive plan of service which will embody the recommendation looking to a reduction of the rates "but at the same time assure to the railroads a just and adequate compensation for the service performed."

In the report the postmaster general criticizes the railroads for their opposition to the space basis of compensation, saying that "certain railroads conducted a nation-wide propaganda to secure a wholly unwarranted increase in their compensation for carrying the mails" and to continue "an indefensible, unsuccessful and uneconomical plan for fixing the compensation for mail pay." The postmaster general is glad to be able to say "that this effort to saddle the department for another indefinite period with the old weight basis of determining mail pay with extra allowances carrying unreasonable increases of pay, was finally rejected by Congress and the adjudication of the matter left to the Interstate Commerce Commission, as suggested by the department." This last statement should be an interesting piece of news to the members of the Senate committee on postoffices and post roads before which representatives of the postoffice department made a most strenuous opposition to the proposal of the railroads that the question of mail pay rates be referred to the Interstate Commerce Commission.

It is stated that the payment of the additional compensation to railroad companies authorized by Congress on account of the increased value of the mails, resulting from the department's orders raising the limits of size and weight for parcel post mail, was delayed owing to the failure of the postal appropriation act for the fiscal year 1916. "It is a source of satisfaction to the department that this matter has been finally adjusted, but it is considered only fair to state that the delay of this settlement was directly attributable to the activities of those assuming to speak for the railroads."

The department objects to an act of Congress which provides that before any changes proposed by the postmaster general in the limit of size and weight of parcel post packages are put into effect they shall be approved by the Interstate Commerce Commission after thorough and independent consideration. It is stated that this requirement would greatly retard the improvement of the service and that this legislation should be repealed.

REPORT ON RAILWAY MAIL SERVICE

Otto Praeger, second assistant postmaster general, has also issued his annual report for the fiscal year ended June 30, 1916, which deals principally with the subject of railway mail transportation. It is stated that "as might be expected of a vast institution which originated on a very small scale and developed rapidly, the operations of the bureau of the second assistant in course of time became barnacled with many sacred, but impracticable, precedents and practices which extended to its contractual relations with the great carriers of the country." A large part of the work during the past fiscal year has been devoted, according to the report, to freeing the bureau from antiquated and impracticable methods and policies with a view to diverting unproductive energies to some fruitful field of endeavor.

One of the myths said to have grown up into the service is the theory that a railway carrier once having obtained a contract for carrying mails has somehow acquired "a proprietary interest or right in those mails as affecting any proposal for better service that might be made by some competing railroad line." This long-standing policy has been reversed and the superintendents of railway mail service have been informed, so that they in turn may inform the railroads, that any line offering a mail schedule sufficiently valuable to warrant a change will receive the mail, regardless of any belated promise by the railway holding the mail to meet the improved service offered by its competitor.

The attention of the bureau has been called by railway postal clerks and others "to what appears to be a deplorable condition on certain railway postal routes." It develops

"that men are on continuous duty on some lines in excess of 30 hours on trains, while instances of 12 to 20 hours' continuous employment on running trains are not infrequent." The bureau was impressed with the inhumanity of expecting clerks to take on the labor and responsibility of handling the mails for such long periods, and investigations are under way to cut these long runs to such proportions as will give them reasonably continuous hours of work. The attention of the bureau has been called to instances where men make two or more hard round-trip runs before they are given the layoff to which they are entitled. It has been represented that "such hard work is more than the human body and mind can endure." These and other similar unfortunate conditions in the service are receiving careful attention and "an investigation is under way to determine the feasibility of cutting some of these runs and of giving the clerks the rest period to which they are justly entitled."

The legislation passed by Congress regarding railway mail pay is reviewed and it is stated that the rules for the operation of the service on the space basis, which went into effect on November 1, are founded on the principle that the department will pay for only such service as is actually rendered and will not ask the railroads to perform service without compensation, the adequacy of which is to be determined by the Interstate Commerce Commission.

Railway mail transportation during the year was conducted over 3,479 routes, having a length of 234,175 miles, at an annual expenditure of \$57,148,381. The annual travel, 502,937,359 miles, represents an increase of .81 per cent and the increase in the expenditure was 5.98 per cent. During the fiscal year the mails were weighed on the railroad routes in the second section, embracing the southeastern states, and the increase in the annual rate of compensation as compared with the last quadrennial weighing was found to be 19.25 per cent. The increase in pay resulting from the last preceding readjustment in this section in 1912 was 9.56 per cent.

The plan of transporting certain periodical mail matter in fast freight trains was continued during the year and it is contemplated to inaugurate such additional shipments as may be found to be practicable and economical. A total of 5,167 carloads of periodical mail matter was transported in fast freight trains during the year at a saving to the government of \$1,436,137 as compared with what it would have cost to have transported it in regular mail trains.

The policy of equalizing the rates of pay for the transportation of mail by railroad routes on the basis of the lowest cost, where the department has the choice of despatching mails by competing lines to the same destination with equal advantage, has been followed when practicable in the readjustment of compensation in the second section under agreement entered into between the department and the railroads.

Order No. 412, requiring the use of the whole number of days in the weighing period as a divisor in obtaining the average daily weight, instead of making an allowance for Sundays, was first applied in the readjustment of 1907 and it is estimated that the total amount of excess payment to the railroads avoided by reason of the new method to and including the fiscal year 1916 was \$40,800,000. It is stated that the railroads generally have objected to this order and in an effort to make effective their protest have modified their agreements with the department by excepting this order. In every case the railroads have been notified that their pay will be fixed by the postmaster general in accordance with the terms of this order and that that is all that will be paid them. Appeals to the Supreme Court by the Chicago & Alton and the Yazoo & Mississippi Valley from the decision of the court of claims sustaining the legality of the order are now before the Supreme Court for reargument. The annual rate of expenditure for railway postoffice cars during the year was \$4,096,286, being \$117,062 or 2.78 per cent less than for the preceding year.

Protest Against the Federal Valuation

Atlanta, Birmingham & Atlantic and Texas Midland Object Strongly to Many Figures in Government Report

THE Interstate Commerce Commission has made public the protests filed by the Atlanta, Birmingham & Atlantic and the Texas Midland against the tentative valuations served on those roads late in October. These protests were filed in compliance with the order of the Interstate Commerce Commission requiring the submission of all objections to these valuations within 30 days after they are served on the carriers. These original reports of the government and the protests of the carriers are of particular interest at this time as the Atlanta, Birmingham & Atlantic and the Texas Midland are the first two roads on which the federal forces have completed their work. The following is an abstract of the objections filed by these roads:

THE ATLANTA, BIRMINGHAM & ATLANTIC

Although the government presented separate valuations of the properties of the Georgia Terminal Company and the Alabama Terminal Railway Company, these properties have always been owned and used by the Atlanta, Birmingham & Atlantic; and the latter road has considered the three valuations as one in presenting its protests.

Exception is taken to the statement in the tentative report that the outstanding capital liabilities amounted to \$59,565,176 on June 30, 1914, for the reason that while this statement was correct on that date, no mention is made of the fact that the property has since been reorganized so that the total outstanding securities since December 31, 1915, have been but \$39,290,000. Also the report showed a net profit and loss debit balance on June 30, 1914, of \$4,446,695.25, and no mention is made of the fact that the business of the carrier has shown a substantial increase since that date, that it has earned and paid all of its fixed charges and has a large cash balance in the treasury. As the tentative valuation report was not completed until October 19, 1916, the carrier states that the information it contains regarding the capitalization and the deficit from operation is misleading at the present time and the report should have called attention to the changes between the date of valuation and that on which the report was completed.

The road objects that the tentative valuation is incomplete in that it omits property owned and used by it solely for carrier purposes on the ground that it was not being used for these purposes on the date of valuation; and that it omits to report on actual properties owned by the road and used jointly with others on the ground that the right of use was fixed by lease on the valuation date. This includes the telegraph lines and fixtures owned by the road and leased to the Western Union with the right of use reserved to the railroad, which right is exercised.

Objection is also raised to the statement in the report that "no other values or elements of value were found to exist," since the state of Georgia taxes the road on the sum of \$1,200,000 for its "franchise" value. The road maintains that there are many such factors which must be considered in the valuation of its properties, including its location and gradients; the right to use properties not owned; the continuity of land, making a complete right of way and terminals; and a completely organized and equipped property ready for business and doing business. The carrier points out that the federal report itself states that the road "interchanges traffic with 27 railroads at 28 points" and also that it is "privileged to use jointly facilities of other companies."

Attention is also called to the fact that there are many "costs" incurred in the construction and development of the property which would again be incurred in the reproduction of these properties under any reasonable program of reproduction which are not allowed for in the valuation. The tentative valuation does not contain any information regarding the methods by which the original cost to date, the cost of reproduction new and the cost of reproduction less depreciation were arrived at, making it impossible to check many of the conclusions of the government.

The road states that the valuation has seemly been prepared upon a series of arbitrary assumptions, some of which are contrary to both law and fact and others of which are contradictory and mutually destructive each of the other, for instance, the present value of the right of way has been assumed to be normal acreage value of the adjacent land without other cost, damage or expense incurred in its acquisition. The arbitrary assumption has also been made that certain lands actually acquired and held for carrier purposes were not so acquired and held, without consulting with the carrier and inquiring regarding its purpose in securing and holding this property. It has also been assumed in reproduction that the right of way and terminal lands will be ready on the date that the construction begins without the necessity of a prior purchase and expenditure upon which interest will accumulate.

Objection is made to the assumption that when the physical parts of a railroad have been connected for initial operation the construction is complete and no other construction expenses are necessary, which assumption is contrary to the experiences of all roads in the construction of their property. Attention is called to the inconsistency in the report whereby the conclusion is reached that highway crossings actually paid for by the carrier would again have to be paid for in reproduction while railroad crossings would not.

It has been assumed that, in reproduction, there will be no depreciation in engineering costs, but there will be depreciation in labor costs and in taxes, interest and all other overhead costs. Another assumption was that with reference to certain physical properties only the *cost* figures were to be ascertained while with other properties such as land, only the figures of *value* were to be reported upon, and that by a combination of these several figures of *cost* and *value* an intelligent result as to the *value* of all the property and its cost of reproduction might be determined.

NO ALLOWANCE FOR MATERIALS OR WORKING CAPITAL

Although the tentative valuation reported materials and supplies on hand amounting to \$433,502.27, it omitted to include them or their cost in the cost of reproducing the property. The federal forces arbitrarily determined that certain lands were conveyed as gifts, grants or donations without knowledge of the fact. In one instance referred to, one section of right of way, while appearing to be given without consideration, was in reality the result of a contract giving to a town a substantial concession in the matter of rates, which concession has cost, is now costing and will continue to cost the road a substantial sum of money.

The tentative valuation also failed to include any working capital in the cost of reproducing the property, while the road had a total of current assets including cash on hand on the date of valuation amounting to \$1,576,359.74. The road maintains that a sum of not less than \$200,000 should be included for this item. The road also protests that,

although a net loss from operation up to June 30, 1914, amounted to \$4,446,095.25, a part of which was undoubtedly incurred in developing the property, no allowance was made for any part of this amount. It maintains that not less than \$2,500,000 should be included for the cost of development. Likewise no credit is allowed for money expended to meet assessments for public improvements, although the engineering report stated the amount of such assessments paid by the carrier to be \$6,109, and as this is incomplete the road maintains that this amount should not be less than \$10,000. Likewise no allowance is made for the cost of reproducing a number of overgrade railroad crossings actually paid by the carrier as shown in the engineering report to amount to \$48,022. The actual cost of these overhead crossings was \$59,040.57.

Referring particularly to the engineering report, exception is taken to numerous items of property omitted entirely and also to the unit prices which "in many instances are wholly inadequate and grossly less than those which would have to be paid in reproducing the property and in many instances less than those actually paid by the carrier in the construction of the property." The carrier also maintains that the period allowed for the construction of the property should be not less than 36 to 60 months instead of the 18 to 36 months estimated in the federal reports. It maintains that interest should be allowed at not less than 6 per cent per annum and that the total interest should be 16 per cent on accounts Nos. 1 to 47 inclusive, except No. 2, for all lines requiring five years to reproduce and 10 per cent for the same account on those lines requiring three years for reproduction and that 4 per cent should be allowed on the total investment in equipment.

Attention is called to the omission of items of cost incurred by the road in its construction for properties then used, but since abandoned. Particular reference is made to the purchase of the Eastern Railway of Alabama at a total cost of \$429,000, this being a railway 29 miles long, of which 8.3 miles was incorporated in the final construction of the Atlanta, Birmingham & Atlantic and the remainder abandoned. This line interfered materially with the new road and it was more economical to the carrier to purchase it and to utilize such portions as were available, while abandoning the remainder, than it would have been to have undertaken the construction of an entirely new line. The carrier states that "it would not be a reasonable reproduction program that ignores physical obstacles actually encountered in the original construction, the removal of which was a proper charge to capital."

APPRECIATION AND DEPRECIATION

Although no appreciation of the property was allowed the road maintains that \$1,250,000 should be added for appreciation in road bed. It also protests that the property should not be depreciated \$4,750,000, as the methods by which this figure was determined "are contrary to established rules of law and to fair and just principles." The carrier also objects to this depreciation because of the implied inference that the property is not maintained in an appropriate, economic and safe operating condition, although the report does not contain any specific statement to this effect. In determining this depreciation attention is called to the fact that the government has ignored the fact that a railroad property is a continuing property; it has assumed that the normal condition of each physical item is one of newness and that to the extent to the departure from such newness there is depreciation; there is a confusion of the cost of maintaining a railroad by repairs and replacements as a mere cost of operation with a loss in capital or investment; the depreciation reported is a speculation based first, upon a speculation as to the present age of the plant units and second, upon a speculation as to the length of its nor-

mal service life; the government has entirely ignored the legal and economic right of the carrier to fully maintain its property out of earnings and to charge the cost of such maintenance, including the cost of replacement, to the cost of operation, the value of which right completely offsets all accrued physical deterioration in the property. The road states that on the date of valuation, some of its equipment and ties were not in a proper and well-maintained condition, but that shortly after this date, they were placed in a thoroughly proper economic operating condition at a cost far less than the amount of depreciation reported in the engineering report, all of which was a simple charge to operation and involved no additional charge to capital or investment and was not, therefore, depreciation.

A comparative estimate of the cost of reproduction new of the road and equipment was made by the road, in which it arrives at a valuation of \$39,079,260.74, as compared with \$24,154,989, reported by the government.

Referring more directly to the land report the road maintains that all of the physical properties including land must be treated alike and that either the present value or the cost reproducing the entire property should be used. The tentative valuation reports the "present value" of carrier land of the railways as \$2,291,413. The road maintains that this value was determined wholly without reference to and without including the cost, damages and expenses that would be incurred in acquiring this land, and that it, therefore, does not represent the present cost of acquisition or the cost of reproduction of these properties. It also objects to the classification of certain lands as non-carrier lands, since the road acted reasonably and with good judgment in acquiring and holding this property. The statement is also made that the "present value" of some of the land is placed at less amounts than the road actually paid for these lands, notwithstanding the fact that adjacent lands have increased in value and there is no inference in the land report that the road was either reckless or improvident in the purchase of this property. The road maintains that in the absence of such evidence it cannot be allowed a less amount than it actually paid in determining the cost of reproduction of the property. Several instances of this are noted in the objection, including one parcel of land for which a "present value" of \$3,843.75 was allowed, while it actually cost the road \$39,992.17.

In determining these values no consideration was given to the rights which a carrier has to acquire in order to construct its railroad; to the damages which the road had to pay to the owners because of the cutting off of means of access to the land, interference with the water supply, damages to buildings, etc. No allowance was given to the road for the removal of or injuries to buildings, or to severance damages paid by the road. The carriers protest that the present cost of acquisition or the present cost of reproduction of the lands owned and used by it for carrier purposes on the valuation date would not be less than \$8,192,369.

Particularly serious objection is made to the accounting report, the road stating "because of the many erroneous conclusions, deductions and inferences therein, the tendency and effect of which is not to furnish facts or information, but to discredit the actual investment of the carrier and its good faith in making same." The objection further states that "the said accounting report is not and does not report to be a true report of the actual disbursements and receipts of the carrier and is not and does not report to be a true and correct report of the syndicating, banking and other financial arrangement under which stocks, bonds and other securities were issued by the carrier, nor the actual expenditures of the carrier. It appears to be merely an attempt to discredit the accounting records of the carrier, and having done this, to announce that the true investment of the carrier or the original cost to date of its properties cannot be ascertained, and thus leaves the estimates made by the field

parties of the commission of the present cost of reproducing the properties unchecked by any figures of cost whatever."

THE TEXAS MIDLAND

The protest filed by the Texas Midland is similar in general to that of the Atlanta, Birmingham & Atlantic, but some points are raised in the latter report which were not brought out prominently in the protest abstracted above.

Particular attention is called to the property used but not owned by the Texas Midland, including 13 miles of line between Commerce, Texas, and Greenville, owned by the St. Louis Southwestern, passenger terminal facilities at Paris, Texas, and Ennis, in which the Texas Midland is a tenant; and lands occupied by industrial tracks, also the telegraph lines built on the carriers' right of way, for the installation of three wires on which the materials were furnished by the Western Union and the labor by the railroad, the maintenance being handled on the same basis. Objection was also made to the omission of 40 acres of land at Enloe, operated as a ballast pit but not in actual service at the time of valuation.

Although the federal report omits to ascertain and report on other values and elements of values, the Texas Midland calls attention to the fact that the state of Texas has for many years taxed the railway on account of intangible elements of value on the sum of \$550,000.

Exception is taken to the use of these figures as indicating either the cost of reproduction or the present cost of acquisition of the right of way and terminal lands, the statement being made that this is "based on the unjustified and arbitrary assumption that such lands may be acquired at the normal acreage value for general, not including railway, purposes of the adjacent and adjoining lands and without any payment on account of improvement. The figure \$236,689.65 reported with respect to land does not represent any facts required by the valuation act to be ascertained and reported." The objection further states that "the report does not show the present cost of condemnation or damages or the expense of acquisition."

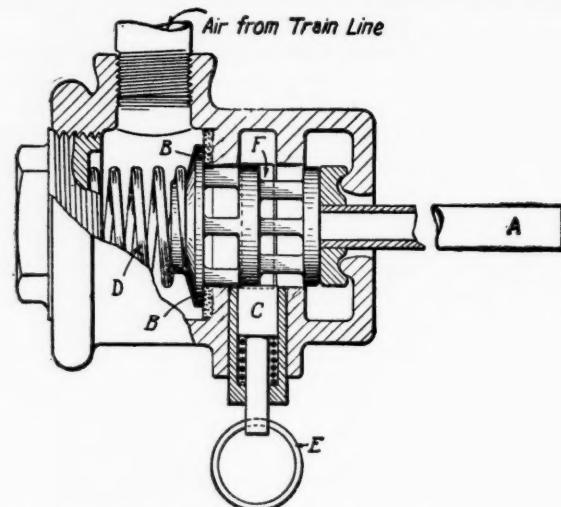
The report further states "that it has been assumed without justification and contrary to the fact that no assessments for public improvements would have to be paid, notwithstanding the fact that the carrier has actually paid and in case of reproduction would be required under existing laws to pay large amounts on account therefor; that the cost of materials and supplies which were actually on hand at the date of valuation is not a part of the cost of reproduction new; that the working capital actually on hand on the valuation date is not to be included in the cost of reproduction new; that no allowance on account of contingencies is properly to be included in the cost of reproduction new; and that nothing should be allowed to cover the cost of developing the physical properties in their earlier stages after the parts had been assembled.

The reference to the accounting report states that "this report appears to be an attempt to rewrite the accounting records of the carrier and does not state the actual expenditures of the carrier. It is not a true summary or synopsis of the actual, financial and accounting history of the carrier and it does not disclose nor can there be determined therefrom the true original cost to date of all the property owned or used by the carrier for its purposes as a common carrier."

GERMAN TRAIN SERVICE CUT.—Press despatches on November 27 reported that a general curtailment of railroad traffic, due to the requirements of the army in the matter of rolling stock for the transportation of troops and a desire to save coal, was scheduled for December 1. The report said that train schedules were being revised to eliminate all trains that could be readily dispensed with. Sleeping and dining cars were to be dropped from most of the trains.

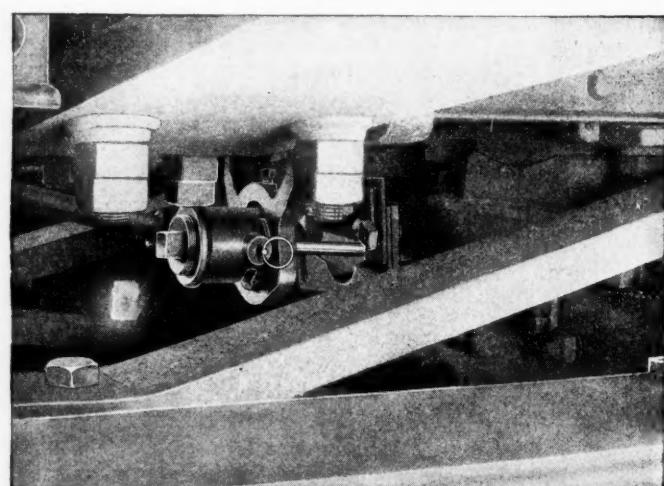
TRUCK SAFETY ATTACHMENT

An attachment the function of which is to set the air brakes whenever the car or tender truck to which it is attached is derailed, broken, or deranged in any way, has been placed in successful operation on several railroads by the Wright Safety Air Brake Company, Greensboro, N. C. It consists of a valve, attached to the body of the car or tender, connected to the brake pipe underneath. A section of this valve is shown in one of the illustrations. It is operated by the pin *A* which is in line with the center bearings of the



Section of Valve for Truck Safety Attachment

car and extends through an adjustable collar located near the center bearing of the truck. As the pin *A* is moved in any direction by this collar it rocks the disc to which the pin is attached, forcing the valve *B* from its seat and allowing air from the brake pipe to pass out through the opening *F*, thus setting the brakes. If this pin is deflected to any great extent, as it would be in case the truck was derailed, it will force the valve back far enough to allow the plug *C* to spring in behind the valve holding it in the open position. The valve is held in the closed position by the spring *D* and when once opened



Truck Safety Attachment Applied to a Freight Car

to its extreme position is reclosed by pulling out the plug *C* by means of the ring *E*.

The collar surrounding the pin *A* is adjusted to suit the conditions of the truck so that the device will not be operated by the normal movement of the truck. This movement may be taken by test, a pencil replacing the pin and a chart the collar. The record of the movement of a baggage car truck is

shown in one of the illustrations. This device has been installed on several railroads where it has prevented serious wrecks by stopping the train when the truck to which it was applied became defective or was derailed. It will operate whenever the trucks leave the rails whether due to a broken rail, spread rails or for any other reason. It will also be operated by a broken journal, arch bar or spring, by splitting



Record of the Movement of a Baggage Car Truck with Reference to the Car Body (slightly over full size)

a switch, or by any other abnormal condition affecting the movement of the truck and threatening the safe progress of the train. Cases have been reported where the device has operated due to excessive rocking of the trucks of cars and tenders. In these cases, however, the valve was opened just enough to make a light service application of the brakes. As the speed was reduced the valve closed of itself.

PROPOSED LEGISLATION AFFECTING RAILROADS

The following bills affecting railroads have been introduced in Congress, in addition to those summarized in last week's issue:

H. R. 18375. By Mr. Sparkman, Dec. 7. To Committee on Judiciary. Prescribing a rule of evidence in certain cases. In suits brought against carriers for loss or damage to goods when liability is based on section seven of act of June 29, 1906, all books and records kept in the usual course of business by carrier regarding icing, etc., may be introduced in evidence by the carrier and shall be *prima facie* evidence of the facts in said records.

S. 7239. By Mr. Hardwick, Dec. 8. To Committee on Interstate Commerce. To amend the act of September 3 and 5, 1916, entitled, "An Act to establish an eight-hour day," etc. Adds two new sections (5 and 6). The Interstate Commerce Commission to have authority to fix hours and other conditions of labor for all employees of interstate railroads actually engaged in interstate commerce; and power from time to time to change hours and conditions and the rate of wages either upon its own initiative or upon the petition of the employees, or of the railroads, or of the public.

It shall be unlawful for any two or more of such employees by concerted action with each other to hinder, delay, or obstruct the operation of railroad trains engaged in interstate commerce because of their dissatisfaction at any decision of the Interstate Commerce Commission . . . or to attempt to do so, or to conspire to do so, and any person who shall in such manner hinder such railroad trains, or hinder or conspire to do so, shall be punished by a fine not to exceed \$5,000 and by imprisonment not to exceed one year, either or both . . .

Bill H. R. 17854, introduced by Mr. Oliver on December 4, which was noted in last week's issue, empowers the Interstate Commerce Commission to prescribe and enforce regulations for the exchange and moving of cars in interstate business. Commission shall have right to require reports from roads showing cars owned, condition and location of same; in general as is now done by the American Railway Association.

It authorizes the commission to fix demurrage charges and to order immediate return of cars to owners. Penalty for first offense not less than \$200, subsequent offenses not

less than \$500 or more than \$1,000. Commission to have power when it is ascertained that cars are being used for storage or warehouse purposes, to require said material to be immediately unloaded. Failure to comply shall subject the railroad to a fine of \$200 a day for every day that any car shall remain loaded after the expiration of five days' notice by commission.

Bill S. 7031, introduced by Mr. Underwood on December 5, briefly noted in last week's issue, provides that the Interstate Commerce Commission shall have power to fix hours of labor and reasonable wages for employees of common carriers, with the exception of railroads, independently owned and operated, not exceeding 100 miles in length, except those whose principal business is furnishing terminals or transfer facilities. The rate of wages and the hours of labor would remain fixed until changed by the commission.

Bill S. 7066, introduced by Mr. Townsend on December 5, also briefly noted last week, provides as follows: When controversies arise between carriers and employees as to wages and hours of labor, the President may investigate causes. He may appoint a special commission, not exceeding seven in number, of persons specially qualified, and all parties to controversy shall be entitled to a hearing. Having made investigation and ascertained facts, commission, with all convenient despatch, shall formulate its report, locating so far as may be possible responsibility therefor and making such specific recommendations as shall put an end to the controversy. Report of commission shall forthwith be transmitted to the President and by him communicated to Congress, with such recommendations thereon as he may deem advisable. A commission appointed under this act shall continue for a period of not over three months from the date of the appointment thereof.

Representative Adamson, chairman of the House Committee on Interstate and Foreign Commerce, on December 5 moved to take up and proceed to the consideration of the Rayburn bill, H. R. 563, providing for the regulation of security issues; but a motion to take a recess prevailed. On December 6, the Speaker laid this bill before the House as the unfinished business on the calendar, but on the point being raised that the call did not rest with the Committee on Interstate and Foreign Commerce, the bill was laid aside and cannot again be brought up except by unanimous consent, until the committee is again reached in the alphabetical call of the committees.

20,000 CARS FOR FRANCE.—The British government, according to press despatches, has engaged to send immediately to France 10,000 freight cars, taken from British railroad companies. Ten thousand additional cars are to be sent over during the first few months of 1917, with a certain number of locomotives. This is to be done, it is understood, because Great Britain's military operations in France have been requiring the use of 20,000 French freight cars.

BRAZILIAN RAILWAY REORGANIZATION.—A plan for reorganizing the Brazilian Railway Company has been agreed upon by W. Cameron Forbes, former governor general of the Philippines, who is the receiver, and local and European bankers. The proposal provides for the raising of \$5,000,000 new capital in France, sanction for the transaction having been secured from the French government. The French have \$100,000,000 invested in the property, which was organized with \$150,000,000 capital by Percival Farquhar and the late Dr. F. S. Pearson. The existing funded securities will not be disturbed, although they may be made income bonds instead of mortgage issues until earnings are well built up. The company's principal obligation is an issue of \$50,000,000 of Sao Paulo & Rio Grande bonds, which were guaranteed by the Brazilian Government. The company will be managed after the reorganization by French bankers and financiers.

Congressional Inquiry on Railroad Regulation

Newlands Committee Concludes Its Hearings for the Present; Will Ask Congress for Extension of Time

BECAUSE of the pressure of other work before Congress, the Newlands Joint Committee on Interstate Commerce which has been holding hearings since November 20 on the subject of government regulation and control of transportation, decided to suspend the hearings for the present and adjourn without date, subject to the call of the chairman. The joint resolution of Congress creating the committee requires it to submit a report by January 8. It is understood that before that time the committee will ask for an extension and that the hearings will be resumed at a later date, possibly not until after the close of the present session of Congress in March. The cross-examination of those who have already appeared before the committee has not been completed and will be continued when the hearings are resumed.

Max Thelen, president of the California Railroad Commission and president of the National Association of Railway Commissioners, appeared before the committee on December 6 and made a statement on behalf of a committee of the National Association of Railway Commissioners opposing the proposal of the railroads for a greater centralization of the powers of railroad regulation in the hands of the federal government as outlined before the committee by Alfred P. Thom, counsel for the Railway Executives' Advisory Committee. Mr. Thelen's statement was postponed on Thursday, December 7, to give W. J. Bryan an opportunity to express to the committee his views in opposition to exclusive federal regulation and Mr. Thelen concluded his statement on Saturday. He was followed by S. W. Brookhart of Washington, Ia., who made an argument in favor of government ownership of railroads.

MR. THELEN'S ARGUMENT

Mr. Thelen agreed with Mr. Thom that Congress could take over the exclusive regulation of interstate railroads without an amendment to the Constitution and opposed the plan of federal incorporation on the ground that it would pave the way for the exercise of such complete federal control.

He agreed that the railroads must secure large amounts of additional capital for extensions and improvements, but disagreed with the claim that the financial credit of the railroads is greatly impaired. He referred to the large earnings of some roads in the present year, saying that although certain roads are in financial difficulties many are abundantly able to secure the additional funds they need on reasonable terms. He desired to take issue with the claim that impaired credit is largely due to regulation, saying that it was proposed to show the committee later the "real causes."

Some of the proposals of the railways, he said, the state commissioners thought were good, but some of them they objected to. He first discussed the plan of federal incorporation, explaining that while a committee of the National Association of Railway Commissioners had reported in favor of it, the report had been politely killed by ordering it to be filed and printed. The plan proposed by the railroads he considered to have been presented "frankly as the agency and instrumentality for taking away from the states practically all their power over railroads" and he linked this plan with the proposal to eliminate state control over rates, saying that the proponents of federal incorporation are usually to be found in favor of federal control of rates. He suggested that the committee ask the carriers to present their proposals more definitely to indicate whether they advocated

a general statute or the issuance of charters directly to each railroad.

That the federal government has authority to create such agencies and instrumentalities as are necessary to carry out its admitted powers, Mr. Thelen said, is clear, and he cited the fact that there have been four federally incorporated railroads, the Union Pacific, the Northern Pacific, the Atlantic & Pacific and the Texas & Pacific. He outlined the history of litigation involving these roads, saying that they had contested state regulation of their rates on the ground that they were federal corporations and that the Supreme Court had held against them only on the ground that Congress had not specifically exempted the roads from state control. Mr. Thelen said he desired to bring these decisions to the attention of the committee to show that Congress by passing a federal incorporation act could exclude state regulation without an amendment to the commerce clause of the Constitution.

"We have the clearest kind of intimation three times in the decisions of the Supreme Court," he said, "that if in the language incorporating a federal railroad Congress clearly expressed the intention that the state should be deprived of its authority over rates, that effect will be accomplished, not under the commerce clause, but under the military power or under the power over post roads. I have presented this argument so that you may have before you clearly the danger of doing one thing and thinking one thing is being done when in fact another thing is being done."

Mr. Thelen further argued that the power of the states in the matter of taxes would be affected by federal incorporation, and that, although the railroads have proposed that the states retain their taxing powers, "some day, if the door is opened, the states will find they have lost their taxing power as well as their power over police regulations." He cited a number of court decisions in support of this contention.

Turning to the question of regulation of security issues. Mr. Thelen predicted that the first large constructive piece of work to be done by the committee would be to provide for adequate regulation by the federal government of the issues of securities of all interstate roads. There is considerable difference of opinion among members of the association, he said, as to whether the action of the federal government shall be concurrent with state action or whether it should be exclusive. He believed that Congress has the full power, by amendment of the commerce act, without federal incorporation, to assume complete and exclusive regulation of security issues, and asserted that in case of any doubt on the subject, it would be very easy to take a test case to the Supreme Court. On the other hand, he said, federal incorporation would cause "a legal fight all along the line greater than any legal fight in which the railroads of this country ever have been engaged."

STATES MIGHT LOSE ALL CONTROL

Mr. Thelen discussed the subject of service, equipment and facilities, saying that these matters are now efficiently regulated by the states, but that if the federal government can take away from the states their powers over rates it can do the same thing as to their powers to regulate service. He made a similar argument as to safety regulations and the exercise by the states of police powers, citing the decision of the Supreme Court in the "white slave" cases to show that the federal power can also be exerted in this field.

Mr. Thelen said that in his judgment, "the railroads are now suffering from the hysteria of pessimism," and that although their earnings are greater than at any other time in their history they "are engaged in the absurd task of trying to ruin their own credit." He stated that the railroads desire to retain the advantages which they now enjoy under state charters while destroying the powers which the states may possess under the present charters. Under a plan of compulsory federal incorporation he thought that if the present capitalization were left unchanged the railroads would have an opportunity to claim that their securities were outstanding under the compulsion of the federal government.

He did not agree with Mr. Bryan that capitalization should be based on cost of reproduction, on the ground that many railroads, because they were unwisely constructed or because their traffic has diminished, are not now worth the cost of reproducing them. He referred to the Western Pacific, which he said cost over \$81,000,000 to build originally and would cost more to reproduce today, but which was sold at a receiver's sale for \$18,000,000. On the basis of present and prospective earnings, Mr. Thelen said, that is all the road is worth. He did not believe that the suggestion that stock be issued without a par value would solve the problem.

The entire plan of federal incorporation, Mr. Thelen insisted, is unnecessary because it is possible for Congress to do everything under the commerce clause of the Constitution without it, which it could do with it.

If the states make rates that discriminate against interstate commerce, he said, the condition ought to be remedied, but he thought the Supreme Court had done so in the Shreveport case decision, and if there is anything wrong with the state regulation of securities "we are willing and anxious that it be made right. In fact, you will find among the strongest advocates of action by the federal government in this field of security regulation commissioners of the various states of the Union. We have entered this field because the federal government did nothing. Whatever action the judgment of this committee and of this Congress may think is necessary in connection with control of security issues by the federal government, whether concurrently with the states, or exclusive, no one will applaud more heartily than the commissioners of the various states."

Mr. Thelen described to the committee at some length the work of the California railroad commission to show that it had co-operated with the roads on many occasions which had been appreciated by the railroads, that over 99½ per cent of the commission's decisions in formal cases had gone into effect without any court action, and that railroad construction in California is still active.

He opposed the proposed plan of regional commissions subordinate to the Interstate Commerce Commission on the ground that they would merely supplant the state commissions with federal office-holders who would be strangers to local conditions. "If the railroads had the intention of making all public regulation ineffective," he said, "they could not do it in any way better than that which they now suggest: first, take away the powers from the states, which are on the job, and secondly, overload the federal government in such a way that the federal government's regulation will break down."

Mr. Thelen concluded his argument by insisting that the railroads have made an entirely wrong analysis of the causes of impaired credit and that they "propose to cut off the good right arm of state railroad regulation, on the plea that state railroad regulation has injured their credit, when the real trouble with them is acute gastritis resulting from an overdose of securities which they have not been able to digest." He read into the record some extracts from the Interstate Commerce Commission reports of its investigations

in the Alton, Frisco, New Haven, Rock Island and Puget Sound cases.

BRYAN AGAINST EXCLUSIVE FEDERAL REGULATION

William Jennings Bryan testified before the committee on December 7 in opposition to the extension of federal regulation of railroads at the expense of the authority now exercised by the states, urging that federal regulation should be in addition to and not a substitute for state regulation. To give the federal government exclusive control is open to objection, he maintained, "if what we desire is more stringent regulation," and he expressed the opinion that its effect would be to weaken regulation.

His first objection was that "in the nature of things there cannot be an efficient regulation from this central source without the creation of machinery that is far beyond the calculation of those who have considered it from that side."

His second objection was that "the farther you remove the work of regulation from the people, the more difficult it is for the people to control their representatives," and that it would be too great a temptation to the railroads to bring pressure to bear on the members of Congress.

"The third point," he said, "is that the absorption of legislative power by the federal government and the surrender of all legislative power by the state governments will practically obliterate the lines of the states and weaken them in the discharge of their duties, while it will tremendously increase the centralizing forces that are at work in our government. The people at home can better attend to the things at home."

Mr. Bryan said that the fact that the railroads asked for greater federalization "is conclusive proof that it is not intended for greater regulation." This, he said, was not intended as a reflection upon the railroads, but that those in charge of the railroads are "just like other people."

The present laws regulating railroads, Mr. Bryan asserted, originated principally with the states, and he referred to the two-cent fare laws in a number of states, objecting that the railroads in some instances charge more for interstate travel than the sum of the local state rates. He mentioned the fact that only a few days ago he and a friend had each saved 85 cents by buying a ticket to a point near a state line at the two-cent rate and buying another ticket for the remainder of the journey. He said he had written to a member of Congress some time ago, suggesting that there ought to be a federal statute requiring railroads to sell interstate tickets at a rate no greater than the sum of the local rates. Mr. Adamson interrupted and said he had referred a bill to that effect to the Interstate Commerce Commission and that the commission had replied in substance that to enact it would enable the different states to make rates for the Interstate Commerce Commission and that they could not approve that.

NOT FOR GOVERNMENT OWNERSHIP

Mr. Bryan told the committee that he does not now advocate government ownership. "I have believed for a number of years," he said, "that government ownership was inevitable, and inevitable only because the railroads will not consent to effective regulation. It is now some ten years since I had occasion to say that unless our experience with the railroads was different from our experience with municipal corporations, the people for their own protection would be compelled to take charge of the railroads. My opinion is that nothing would hasten the government ownership of railroads more than the success of the plan which is under discussion."

"Now, personally, I cannot say that I desire government ownership, because I lean to the individual idea rather than to the collective idea; that is, I believe that government ownership is desirable only where competition is impossible."

I only favor government ownership on the condition that a proper regulation is impossible.

"I am perfectly willing to give to private ownership a fair and complete trial and I have gone so far in my willingness to try effective regulation as to suggest this: that the railroad capitalization be reduced to an honest basis and that then the railroads be allowed to earn a sufficient income to keep their stock at par and in addition a sum be put into a surplus, from which the railroads could draw in bad years to keep their dividends at a just and reasonable point."

Mr. Bryan said he would like to see the stock of a railroad made "as substantial and as unvarying as the value of a government bond." Capitalization, he thought, should represent the cost of reproduction. In reply to questions by Senator Newlands as to what he regarded as a fair return to be earned by railroads, Mr. Bryan said he thought it would be impossible to fix it definitely in figures, but that the principle was easy to ascertain. He suggested that the dividends should be sufficient to keep the stock at par with a reasonable margin to cover fluctuations that could not be calculated.

"I would allow the market price of money to determine," he said, "so that a margin of, say, from 1 to 10 per cent above the par value might be allowed: that whenever the dividend paid raised the value of the stock above 10 per cent it ought to be reduced. If the dividend paid reduced the value of the stock below 1 per cent it ought to be raised. To illustrate what I mean, suppose we allow the rates to be sufficient to collect a dividend of 5 per cent and then suppose we allowed 2 per cent to be collected in addition to be put into surplus until the surplus reached, say, 25 per cent of the capital."

REGULATION OF SECURITIES

Mr. Bryan advocated federal regulation of security issues, but concurrently with, and not as a substitute for, state regulation. Senator Newlands asked how a corporation could obey both the national government and the state governments in case they differed as to the amount of securities to be authorized. Mr. Bryan replied that if the federal government fixed a maximum lower than the maximum fixed by the state there would be no conflict. He was not asked what would happen in case the maximum fixed by the state were lower than that fixed by the national government. He said that after the government has ascertained the actual value of the railroads that value ought to be represented by stocks and bonds and that thereafter no stocks and bonds should be issued except under supervision and for actual money invested.

"I would not be willing to say that as soon as you ascertain what the actual value of the road is you should by law wipe out all the rest," he said, "because there may be equities to be considered."

If any excess of capitalization above value were found to exist, he suggested, this excess should be disposed of in some way, possibly by division between the stockholders and the general public.

Senator Newlands asked if the states acting as a unit through the national government have not been able to do more in the way of properly regulating the railways than the individual states have been able to do.

"I cannot agree with you on any evidence that I know of," replied Mr. Bryan, "but I shall be glad to consider any evidence which you have in support of that proposition."

"I had the impression that it was self-evident," said the chairman.

Mr. Bryan was invited to appear before the committee again at a later date.

Mr. Brookhart, who appeared as representing the Iowa State Railway Commission, and who has been associated with Clifford Thorne in rate cases, read a lengthy statement

advocating government ownership of railroads. He said that ten years ago he did not believe in government ownership, regarding it as a "socialistic vagary," but that he now believed it a desirable and immediate solution of the railway problems. He asserted that government ownership of carriers would result in an annual saving to the United States of \$1,200,000,000, made up of a saving of \$500,000,000 a year because of the ability of the government to obtain capital at a low rate of interest, \$300,000,000 saving of unearned increment of railroad real estate, and \$400,000,000 now alleged to be wasted through competition in the duplication of equipment and operating forces. He said that railroad real estate exclusive of improvements, is now worth six billions of dollars and that in the next 20 years this value will double, involving an annual interest charge of \$300,000,000.

"Fifty-three governments now own their railroads," said Mr. Brookhart. "In all of them labor is better treated than under private ownership. The work is not so intensive, more men are employed and wages are better. This improves service and increases safety. If \$300,000,000 were used in this way, it would still leave a saving of \$900,000,000 each year to be used in lowering rates, improving the service and enlarging facilities. This vast sum would take care of all of the needs of the future."

MEETING OF WESTERN ASSOCIATION OF SHORT LINE RAILROADS

At a meeting in Denver last month the Western Association of Short Line Railroads decided to have introduced in each of the eleven western states in which it has members, a bill to provide for the regulation of motor vehicles carrying freight and passengers for hire as common carriers. This action followed an address on the subject by Edgar M. Heigho, receiver of the Pacific & Idaho Northern. The association also further endorsed a resolution passed at its August meeting in San Francisco favoring the centralization of the regulatory power over railroads engaged in interstate commerce in the Interstate Commerce Commission, and the creation of regional boards under the control of that commission. This action followed a paper covering the subject which was presented by M. W. Cooley, general manager of the Uintah Railway Company, Mack, Colo.

The association's decision to introduce legislation providing for the regulation of motor vehicles followed unsuccessful efforts to accomplish this end before the Railroad Commission of California and in the courts of that state. The association filed a complaint with the California commission asking for the application of the provisions of the public utilities act to motor vehicles. When the commission dismissed the complaint the association went to the State Supreme Court and briefs on the case were submitted to the court in May, 1916, but as yet no decision has been rendered.

The Denver meeting was presided over by D. M. Swobe, president of the association, who is also vice-president of the McCloud River Railroad. Three directors were elected to succeed themselves for a term of three years, viz., Guy W. Talbot, president of the Walla Walla Valley, Walla Walla, Wash.; Clarence M. Oddie, general counsel for the Nevada Central, and Edgar M. Heigho.

A STEEL PLANT FOR SIBERIA.—A new iron and steel plant in Siberia is contemplated. The plan, as a result of a recent meeting between representatives of the Russian Government and of the iron industry, is to raise a capital of \$10,000,000, the interest to be guaranteed to the banks subscribing. The Government is to lease the district of Kusnezk, where the works are to be located, to the company for 60 years, the company to supply a fixed tonnage of rails and other railroad material yearly at current prices.

Pulverized Fuel for Locomotive Service*

Abstract of a Paper Presented Before the Railroad Session of the A. S. M. E., Including the Discussion

By J. E. Muhlfeld
President, Locomotive Pulverized Fuel Company

DURING the past decade the cost for money, labor and material entering into the financing, new general construction and equipment, and the maintenance and operation of railways, including taxes, has increased enormously; while the gross operating revenues per passenger and per ton-mile have decreased. For this reason the credit of many properties, which is dependent upon the net profits and the probability of expansion of earning capacity, has seriously depreciated.

To continue or establish satisfactory credit in order to provide adequate capital at reasonable cost, a steam railway must preserve the proper ratio between gross operating revenues and expenses; and this ratio is largely contingent upon the effectiveness of its developed means for moving traffic. As next to labor the largest single item of cost for transportation is the fuel used in locomotive operation; and as in the final analysis the cost per revenue passenger or per ton-mile is largely conditional upon the capacity, effectiveness and economy of the unit of motive power per hour, it is easy to realize to what extent the credit of a steam railway is controlled by its locomotive performance and expense.

The expenditure for locomotive fuel for the steam railways in the United States now approximates \$300,000,000 per annum, of which from \$75,000,000 to \$100,000,000 represents the proportion that is expended to kindle, prepare, clean, and maintain fires on grates when locomotives are standing, drifting or otherwise not actually using steam to move themselves, either light or with trains.

The opportunity for reducing the non-productive time of existing locomotives and for relieving terminal congestion that is now caused by the necessity for cleaning fires, ash-pans, flues and smokeboxes; inspecting and repairing draft, grate and ashpan appliances and for firing up and supplying firing tools and equipment to locomotives burning coal on grates, makes the use of pulverized fuel one of the most effective and economical means for increasing the net earning capacity of present single and double track steam roads. Steam locomotives will be equipped to approximate electric service by the use of pulverized fuel, which in turn will eliminate smoke, soot, cinders, sparks and fire hazards; reduce noise, time for despatching at terminals, and stand-by losses; and increase the daily mileage by producing longer runs and more nearly continuous service between general repair periods.

The principal fuels adaptable for use in pulverized form in locomotives are anthracite, semi-anthracite, semi-bituminous and bituminous coals, lignite and peat. These fuels differ more in physical characteristics than in chemical composition, but as the carbon and hydrogen content are the most valuable elements and determine the calorific value, they are usually taken into account for classification purposes. The "clinkering" and "honeycombing" of ash is one of the worst troubles to be contended with in the combustion of coal, and its formation may be either chemical or by fusion. Clinker is of two kinds, hard and soft. Hard clinker is formed by the direct melting of some of the ash content. It hardens as it forms and usually gives but little trouble. Soft clinker is formed by the slagging of the ash and is either pasty or fluid and steadily grows in size. "Honey-

comb" or flue-sheet clinker is formed by the condensation or coking of tarry matter or vapor as it strikes against the firebox sheets, and results in the accumulation of a relatively soft, light, ashy substance that grows or spreads over certain of the refractory or metal parts of the furnace.

With the use of pulverized fuel the usual difficulties resulting from the formation of hard and soft clinker on grates are eliminated, but with fuels containing certain intrinsic combinations of ferrous silicates which fuse at comparatively low temperatures (2,000 to 2,300 deg. F.) the honeycomb formation will result when the proper air-supply and combustion conditions do not obtain to produce ferric silicates, which fuse at relatively high temperatures (2,500 deg. F. and above).

For the fiscal year ended June 30, 1914, the Interstate Commerce Commission reports a total of 64,760 locomotives of all classes in the United States having made a total of 1,755,972,325 miles. This gives an average for each locomotive owned of about 27,115 miles per annum, 74 miles per day, or but little over 3 miles per hour. From the foregoing figures it is easy to imagine that over one-half of the time of locomotives is now spent at terminals in the hands of the transportation and mechanical departments, and that most of this delay is due to the necessity for cleaning fires, ash-pans, flues and smokeboxes; inspecting and repairing draft, grate and ashpan appliances; and for firing up and supplying firing tools and equipment. Frequently the delays to locomotives waiting to reach ashpit tracks and to rekindle fires exceeds the time required to do this work, and during the interim much fuel is needlessly consumed and the boiler subjected to excessive contraction and expansion.

With pulverized fuel a locomotive having the boiler filled with cold water may be brought under maximum steam pres-

TABLE I.—PERFORMANCES OF TEN-WHEEL TYPE LOCOMOTIVE WITH PULVERIZED COAL

	1	2	3
Fuel	Bituminous	Bituminous	Bituminous
Fineness, per cent through 200 mesh	0.85	0.85	0.85
Moisture, per cent	0.40	0.81	0.59
Volatile, per cent	24.72	36.27	24.36
Fixed carbon, per cent	68.43	58.29	65.05
Ash, per cent	6.85	5.44	10.59
Sulphur, per cent	1.96	0.68	0.84
B.t.u. per lb.	14,739	14,334	13,912
Miles run, total	1,324	426	398
Cars per train, average	61	65	60
Adjusted tonnage per train, average	1,719	1,808	1,759
Speed when train was in motion, miles per hour, average	26	25	24
Boiler pressure when using steam (200 lb.), average	198.3	193.5	194.9
Front-end draft when using steam, in. of water, average	7.15	7.79	6.69
Firebox draft when using steam, in. of water, average	3.50	3.22	3.18
Temperature of steam, deg. F.	562	573	555
Coal fired per hour of running time, lb. (average)	3,275	3,063	3,457
Adjusted ton-miles per lb. of coal (average)	12.84	13.97	11.59

sure within an hour, and the fuel feed then stopped until it is called for service. When standing or drifting at terminals or on the road, the fuel feed can also be discontinued as the steam pressure can always be quickly raised. After the trip or day's work the locomotive can be immediately stored or housed, the usual ashpit delays being entirely eliminated. The possibilities for increasing the product've time of existing locomotives and for relieving terminal congestions that are now brought about by the necessity for cleaning and rebuilding fires on grates, makes the use of

*For an illustrated description of the locomotive equipment for burning pulverized coal see the *Railway Age Gazette* for February 25, 1916, page 351. A description of the C. & N. W. pulverized coal burning locomotive will be found on page 227 of the issue of August 11, 1916.

pulverized fuel one of the most attractive and quickest methods for increasing the earning capacity of present single- and double-tracked steam railways.

The performances of a ten-wheel type freight locomotive,* rated at 31,000 lb. of cylinder tractive effort, with 69-in. driving wheels, when used in fast through-freight service on runs of from 91 to 138 miles in length for the purpose of testing various fuels under identical adjustment conditions, will be found in Table I.

The locomotive was worked at its maximum capacity on all trips, about 10 per cent more tonnage being hauled than usual for like locomotives burning coal on grates, and at practically fast-freight schedule speed. The exhaust-nozzle opening was about 25 per cent larger than the maximum for hand firing. The general results were excellent, particularly as regards tonnage, speed, combustion, and steam pressure, the latter being maintained at full speed with the injector supplying the maximum amount of water to the boiler.

With the highest-sulphur coal (No. 1) and the highest-ash coal (No. 3) there was less than 1 cu. ft. of slag in the slag box at the end of each run, and practically no collection of ash or soot on the flue or firebox sheets. In fact, with the No. 3 fuel there was less than 2 handfuls of slag, ash and soot collected on each trip.

The steam railways in the anthracite-coal-mining district generally use for their locomotive fuel mixtures which will run from 25 to 50 per cent of bituminous and the balance of anthracite pea and buck sizes which will pass through a $\frac{1}{8}$ -in. and over a $\frac{5}{16}$ -in. round opening. As anthracite coal is very low in volatile, ignites slowly, and is a poor conductor of heat, the bituminous mixture is used to overcome the trouble this causes when the smaller sizes must be burned on grates, and even then it necessitates the use of unusually small exhaust nozzles to create sufficient draft.

In the experiments with pulverized anthracite fuel for locomotives the idea has been to utilize the grade of coal of lowest commercial value, such as birdseye, which is of a size that will pass through a $\frac{5}{16}$ -in. and over a $\frac{1}{16}$ -in. round opening, as well as the refuse called culm or slush, which passes through the $\frac{1}{16}$ -in. round opening and is usually wasted in the washery water or used for back-filling the mines. To reclaim this slush a couple of wooden bins were installed, through which the washery water could be finally passed for the collection of the solid matter. The analyses of the various fuels used may be approximated as given in Table II.

TABLE II.—ANALYSIS OF FUELS USED IN EXPERIMENTS WITH PULVERIZED ANTHRACITE AND BITUMINOUS MIXTURES

Item	Bituminous Run-of-Mine	Anthracite		Per Cent
		Birdseye	Slush	
Moisture, per cent.....	0.50	0.50	1.00	
Volatile, per cent.....	29.50	7.50	6.00	
Fixed carbon, per cent.....	60.00	77.00	71.00	
Ash, per cent.....	10.00	15.00	22.00	
Sulphur, per cent.....	1.50	1.00	2.5	
B.t.u. per lb.	13,750	12,750	11,250	
Fineness, per cent through 200 mesh....	86.00	86.00	86.00	

At the commencement of the development work the locomotive was equipped with an arrangement of refractory baffles and fuel and air inlets for burning 100 per cent bituminous coal, and after this had been properly accomplished successive adjustments were made to burn the following mixtures, the last of which is now being used with as satisfactory results as the 60 per cent bituminous and 40 per cent birdseye:

- First.—75 per cent run-of-mine bituminous and 25 per cent anthracite Birdseye.
- Second.—67 per cent run-of-mine bituminous and 33 per cent anthracite Birdseye.
- Third.—60 per cent run-of-mine bituminous and 40 per cent anthracite Birdseye.
- Fourth.—60 per cent run-of-mine bituminous and 40 per cent anthracite slush.
- Fifth.—50 per cent run-of-mine bituminous and 50 per cent anthracite slush.
- Sixth.—40 per cent run-of-mine bituminous and 60 per cent anthracite slush.

*The operation of this locomotive was referred to in an article on page 941 of the *Railway Age Gazette* for April 30, 1915.

Further work along this same line will determine just how great a percentage of anthracite slush can be used to the best advantage, but the evaporative results so far obtained, *i.e.*, about 7 lb. of water from feed-water temperature per lb. of coal, indicates that considerably more than a 60 per cent anthracite-slush mixture may be utilized. This accomplishment not only means a decrease of 25 per cent in the cost per ton for locomotive fuel, but also the release of a large tonnage of commercial anthracite, which is becoming more scarce and in greater demand each year.

The principal trouble to be overcome has been on the intermittent runs, as it is more difficult to maintain proper combustion with a slow fire and to re-ignite the fuel after the feed has been stopped for a time, with the low than with the higher volatile coals.

The same increase can be made in the size of the exhaust-nozzle openings (about 25 per cent) for anthracite as for bituminous coal when burning in pulverized form, as compared with hand firing of coal on grates.

The development of sufficient drawbar pull in a Consolidation type of freight locomotive with 63-in. diameter driving wheels, rated at 61,400 lb. of cylinder tractive power, to haul a freight train of 23 loaded cars, (representing about 1,562 actual tons) over a ruling grade of $1\frac{1}{2}$ miles of 1.65 per cent grade with a 6-deg. curvature, further indicates the advantages of sustained boiler horsepower in combination with reduced cylinder back pressure, which is only made possible by this method of stoking and burning fuel.

The average results of a number of trips made by an Atlantic type passenger locomotive, rated at 21,850 lb. cylinder tractive effort, with 81-in. diameter driving wheels, when used in high-speed passenger service on round-trip runs of 171 miles in length, are shown in Table III.

TABLE III.—PERFORMANCE OF ATLANTIC TYPE PASSENGER LOCOMOTIVE
Analysis of Fuel Used

Kentucky unwashed screenings—	Per Cent
Fineness, through 200 mesh, per cent.....	83
Moisture, per cent.....	2.46
Volatile, per cent.....	36.00
Fixed carbon, per cent.....	54.00
Ash, per cent.....	7.94
Sulphur, per cent.....	0.79
B.t.u. per lb.....	13,964

Locomotive Performance

Miles run.....	171
Running time, hours.....	3.87
Train, number of cars.....	5.8
Train, tonnage.....	291
Speed, miles per hour.....	44.2
Drawbar pull, pounds.....	2,711
Horsepower per hour.....	319.5
Fuel used, tons.....	3.82
Water used, gallons.....	8,381
Fuel per hp.-hour, lb.....	6.17
Water per hp.-hour, lb.....	56.48
Evaporation, water per lb. of coal, lb.....	9.15
Evaporation from and at 212 deg. F., lb.....	11.1
Boiler efficiency, per cent.....	77

The combustion results may be indicated by the smokebox-gas analysis given in Table IV.

TABLE IV.—SMOKEBOX GAS ANALYSIS FOR THE TEST RECORDED IN TABLE III

Pounds of coal burned per hour	CO ₂ Per Cent	CO Per Cent	O Per Cent
3,067	14.5	0.0	4.5
3,498	15.2	0.0	2.8
3,931	15.2	0.0	4.0
4,000	16.0	0.4	2.6

This locomotive could be fired for the round trip with a variation of not over two pounds in the boiler pressure, and the size of the exhaust nozzle used was $5\frac{1}{2}$ in. in diameter and the temperature of the superheated steam averaged about 635 deg. F. for steam of 185 lb. boiler pressure and the smokebox gases about 460 deg. F., although maximum temperatures of 715 deg. F. for superheated steam and of 482 deg. F. for smokebox gases were recorded.

From tests made with pulverized lignite having an analysis of about 1.8 per cent moisture, 47 per cent volatile, 41 per cent fixed carbon, 9.5 per cent ash, and 0.75 per cent sulphur, and a heating value of 10,900 B.t.u. per lb., in regular passenger locomotive service, the same satisfactory results were obtained as with bituminous coals, the combus-

tion and operation being entirely smokeless, sparkless and cinderless, and the steam pressure being fully maintained.

With pulverized fuel the control of the fuel feed and thereby of the over- or under-production of steam is nearly perfect. A locomotive can be fired up and the fuel consumption then stopped until a few minutes before starting time. At the end of the run, or when drifting, the fire can be extinguished at will and quickly re-ignited without any special equipment or materials. A locomotive with boiler full of water and 185 lb. of steam pressure, after standing 11 hours, without fire, still had 80 lb. of steam pressure.

Comparative tests made between similar locomotives in the same service resulted in the use of 2,775 lb. of lump coal, hand-fired to get up steam and for terminal handling and dead time, as compared with 1,569 lb. of pulverized screenings to produce the same result, or an increase of over 75 per cent. The greatest saving is in the firing up alone, this requiring 1,700 lb. of lump coal as compared with 750 lb. of pulverized screenings, or an increase of over 225 per cent. In the engine-house terminal handling there is the least possible delay and expense. No more time or facilities are required than for fuel-oil-burning locomotives. A locomotive fired up at 6 a. m. can leave with its train at 7 a. m., and upon arrival at the destination engine-house can be immediately fueled, watered and housed, the slag-pan being dumped over the engine stall pit.

Through the possibility of enlarging exhaust-nozzle openings from 25 to 50 per cent as compared with the areas required for burning coal on grates or fuel oil, the full benefit of expenditures for improved cylinders, valves and valve gears, particularly in connection with cylinders of large volume, can now be obtained. Heretofore the necessity for maintaining relatively small exhaust-nozzle openings to produce the required firebox draft has enabled but little benefit to be gained from improved steam distribution, as cylinder back pressures of from 15 to 30 lb. when operating at maximum capacity of engine and boiler are not at all uncommon in some of the most recently built stoker-fired single-expansion locomotives. As every pound of cylinder back pressure saved is equal to at least two pounds added to the boiler pressure when a locomotive is working at its maximum capacity, and further provides freer movement and less wear, tear and fuel consumption, the benefits to be derived are obvious.

As the limiting factor of a steam locomotive is, or should be, the ability of the boiler to produce steam, the rate and effectiveness of combustion become the controlling factors. When coal is burned on grates a rate of about 50 lb. of run-of-mine, and of about 60 lb. of lump bituminous coal, per sq. ft. of grate surface per hour is the maximum allowable for the greatest boiler efficiency. However, as this limits the rate of consumption to a total of from 3,000 to 6,000 lb. per hour for the average modern locomotive of great power, and as the actual coal supplied to the firebox by mechanical stoking frequently reaches a rate of 150 lb. per sq. ft. of grate area, or a total of from 9,000 to 15,000 lb. per hour, the boiler efficiencies frequently run as low as from 55 to 45 per cent and even less. Therefore the necessity for eliminating grates if much over 12 lb. of water per sq. ft. of evaporating surface per hour is to be obtained with reasonable efficiency.

From results established during the past six months, the quantity of live steam required for the operation of pulverized fuel burning equipment when the locomotive is being worked at its maximum boiler-horsepower capacity, is about 1½ per cent of the saturated steam generated, which is considerably less than what is required for the steam-jet operation of mechanical stokers when firing coal on grates, and very much less as compared with what is used in the generally existing steam-jet practice of burning fuel oil; this latter amount, according to reports made by the U. S. Naval Board, is about 6 per cent of the total steam generated.

Comparing the use of pulverized fuel and fuel oil for steam-locomotive purposes, it may be stated that with pulverized coal at 13,750 B.t.u., costing \$2.35 per ton, and fuel oil at 19,500 B.t.u., costing \$2.75 per hundred gallons, an amount of at least \$2.50 must be expended for the fuel oil necessary to perform the same useful work as will obtain from \$1.00 expended for pulverized fuel.

The development work pertaining to the use of pulverized fuel for locomotives has been carried along in direct conjunction with the use of like fuel in one 463-hp. nominal rating Stirling type of stationary boiler, various tests being made for the purpose of determining the best combination of fuel and air admission, flameway, and draft and furnace construction for the maximum boiler capacity and efficiency consistent with minimum renewal of refractory materials. Both bituminous and anthracite fuels have been used, the principal work being in connection with the latter on account of the greater difficulty in maintaining combustion due to the low volatile content.

In general, it may be stated that the use of pulverized anthracite slush will double the steam-generating capacity of boilers now burning birdseye anthracite hand-fired on grates, and at the same time eliminate fire cleaning, greatly decrease the amount of ash to be handled, and reduce the boiler-plant labor cost about 40 per cent. Furthermore, with the pulverized fuel, the boiler pressure can be more readily maintained or increased or reduced to meet the requirements and when one or more of the boilers are not needed temporarily, the fuel feed can be stopped and started at will, thereby eliminating the necessity for maintaining banked fires and burning fuel when not required in order to have the boilers ready for instant use.

An investigation of the culm banks in the anthracite-coal-mining district would undoubtedly disclose many millions of tons of domestic and steam sizes of fuel that can be reclaimed, and in addition, the large percentage of slush that would be produced in this process could all be utilized in pulverized form for power-generating purposes.

DISCUSSION

W. L. Robinson, supervisor of fuel consumption, Baltimore & Ohio Railroad, in discussing Mr. Muhlfeld's paper, called attention to the effect which the car shortage had in impairing the regularity of the supply of coal of the proper grades for use in passenger and stoker-fired freight service. On account of the irregularity of the supply it has been necessary to put lump coal on stoker-fired locomotives and in some cases to put slack coal on passenger locomotives. With the general use of pulverized fuel, all locomotives using the same class of coal, the minimum interference with the coal supply resulting from car shortages would be produced. He also referred to the effect on the cost of operation which is being produced by the continually increasing price of the commercial grades of coal. Referring to Mr. Muhlfeld's statement that \$75,000,000 to \$100,000,000 of the \$300,000,000 expended annually for fuel is accounted for by stand-by losses, he stated that results of some dynamometer tests on the Baltimore & Ohio almost exactly checked with this statement, only about 66 per cent of the total amount of coal purchased being accounted for in actually hauling trains.

From a conducting transportation standpoint Mr. Robinson considered one of the biggest advantages in the use of pulverized coal to be the possibility of reducing delays at terminals. Another point emphasized by Mr. Robinson was the ability of the fireman to check the engineer on signal indications, because with pulverized fuel it is unnecessary for him to leave the seat box.

C. W. Corning, chief service inspector, Chicago & North Western—Discussing this subject from the viewpoint of a locomotive engineman, of the many things which contribute

toward the lightening of his cares in the discharge of his duties, probably the two most essential conditions are properly working injectors and the free steaming of the engine. In all the runs made by the Chicago & North Western Atlantic type locomotive equipped for burning pulverized fuel, it has never failed to deliver all the steam required. A locomotive is often operated in accordance with the fireman's physical endurance. On one occasion, through no fault of the engine or train, there was a delay of several minutes, at which time it was noted by the engineer that provided he could maintain a certain speed over the last 25 miles of the trip, the train would be brought to the terminal on time. This was accomplished and the steam pressure never varied more than two pounds under the maximum. Under the same conditions it would have been impossible to have obtained the same results had the engine been hand-fired, as it would have been beyond human endurance to have maintained the steam pressure required.

Another feature which impresses itself on the mind of the engineman is that in the event of the failure of the injector it is a simple matter to shut off the supply of fuel until the difficulty can be remedied and the fire relighted and very often it is unnecessary even to stop. On the other hand, should it become necessary to draw the fire in one of our modern locomotives, it would be practically an impossibility and an attempt either to extinguish or deaden the fire would mean a very serious engine failure.

The draft appliances, when once adjusted on a pulverized fuel burning locomotive need not be changed to meet conditions necessary to burn different grades of fuel, or to meet changes in climatic conditions. It is the practice at this time of year to change drafting appliances to produce a stronger draft on the fire in order to overcome the frozen moisture in the fuel.

J. H. Manning, superintendent of motive power, Delaware & Hudson—The Delaware & Hudson, located in the anthracite coal fields of Pennsylvania, closely connected with a territory that produces about 80,000,000 tons of anthracite coal per year, it is not hard to understand that from the time this coal is put in the mine car to proceed to the breaker and there be prepared for the market, with a size that starts probably with 12-in. irregular lumps and ends with birdseye, a great deal of extremely fine coal and dust accumulates in the process. This cannot be burnt on the grates; but, if at all, in suspension in a refractory furnace. For this purpose there is available in our neighborhood 550,000 tons a month. This latter and the fact that there were located around us a number of industrial plants successfully burning bituminous coal in pulverized form, encouraged us to build an experimental locomotive producing approximately 2,700 cylinder horsepower.

We soon found out it would be impossible to burn clear anthracite coal in pulverized form. Due to the low volatile, it would promptly snuff out if the engine slipped or worked extremely hard, and the firebox temperature would not permit it to again flash. We, therefore, determined to start with 75 per cent bituminous and decrease until it was found that the objectionable feature was removed. This continued until a mixture of 60 per cent anthracite and 40 per cent bituminous was obtained. We find this gives splendid results, the engine steams freely with very little smoke and is very nicely controlled by the fireman to the extent of keeping the engine within three pounds of the maximum pressure continuously without popping, under the different operations necessarily obtaining in a day's work with an engine of this character, and we have experienced no firebox trouble whatever.

Such difficulty as we have had with the pulverized fuel mechanism for the introduction of the fuel into the firebox has been satisfactorily eliminated and the successful burning of pulverized fuel in suspension in locomotive fire-

boxes, to my mind, has passed beyond the experimental stage.

S. S. Riegel, mechanical engineer, Delaware, Lackawana & Western—The paper inspires the belief that the initial work has been well done along correct lines. In the use of an induced draft for the secondary air of combustion lies possibly its greatest assurance of success, as this overcomes (properly applied) the destructive heat action of the fuel jets against the brick work of the combustion chamber and furnace linings, and at the same time furnishes a convenient way to secure the necessary air for combustion with the effort required to remove the ashy deposits from the heating surfaces and front end of the locomotive.

It is particularly interesting to find that a satisfactory system of utilizing pulverized fuel in locomotive service so easily adapts itself to locomotive conditions, as a locomotive must operate on such greatly varying conditions, and always in doing the maximum work on an intensive draft condition. From the viewpoint of the possibility of overcoming the standby and firing up losses of the locomotives, powdered coal is given an opportunity which is not possible in stationary practice. As the author states, the standby losses may constitute from one-fourth to one-third of the total fuel consumption, and it is obvious the opportunity for reducing these losses is very great.

Likewise, as it is necessary to separate the fuel particles and surround them with sufficient air for perfect combustion, it would seem equally desirable to separate the particles of the crushed materials in the drying process, and the most effective dryer would be the one which best effected this separation of the particles of fuel. The burden of about 40 cents per ton in the present method is a large handicap and it must be reduced as much as possible.

George L. Fowler referred to some tests which he has made to determine the movement of firebox sheets in service, which showed the extreme sensitiveness of the sheets to changes in temperature. The opening of the firedoor was found to cause a drop in temperature of the adjacent sheets of about 250 deg. F. in 15 sec. He pointed out that in burning pulverized coal, the firebox sheets may be maintained at a much more uniform temperature, with a reduction in the stresses produced by sudden temperature changes.

C. D. Young, engineer of tests, Pennsylvania Railroad, said that in some tests made on a locomotive-type boiler in stationary service, the greatest difficulty was to prevent the destruction of the brickwork when burning coal in the quantities used in road service, and that when the temperature of the firebox is reduced to overcome this difficulty by the use of excess air, the efficiency of the combustion is reduced. He also called attention to the fact that the Chicago & North Western Atlantic type locomotive is a light locomotive and was lightly loaded in the test runs; and that under the same conditions with proper supervision, hand-firing would have produced smokeless operation. He also pointed out that the performance of this locomotive was very poor, probably being accounted for by the water rate, which was 56 lb. per indicated horsepower hour, whereas, a fair figure would be 20 lb. to 21 lb. Allowing for the excessive water rate the fuel performance was about what might be expected with hand-firing.

Charles W. Baker, editor of the Engineering News, emphasized the economic importance of the development of pulverized fuel. He considered the point of immediate interest, however, the possibility of using pulverized fuel in switching service as a means of smoke elimination in yards and terminals about large cities.

THE GREEK RAILWAY STRIKE.—The Greek cabinet sat for 10 hours in Athens on October 28 discussing the railway strike with the directors of the Larissa Railway. Ultimately the principal demands of the railwaymen were conceded.

General News Department

The Interstate Commerce Commission has postponed the effective date of its order as to safety appliances on railroads in Porto Rico until January 1, 1918.

The freight transfer shed of the Baltimore & Ohio at Brunswick, Md., was mostly destroyed by fire on December 7, together with eight loaded freight cars and much merchandise; estimated loss, \$50,000.

The attorneys for the government on Monday at Washington asked the Supreme Court to dismiss the government's appeal in the New Haven case in the suits against three directors, John T. Billard, James S. Elton and William Skinner.

The Public Utilities Commission of Illinois reports 709 persons killed on the steam railroads of the state in the year ending June 30, 1915, which is 15 fewer than in any year since 1899. Sixty per cent of the killed were trespassers, and less than two per cent were passengers. The decrease in total fatalities, as compared with 1914, is 20.5 per cent.

Milton H. Smith, president; A. R. Smith, vice-president; and George W. Jones, attorney, of the Louisville & Nashville, filed in the Supreme Court on December 9 an appeal from the ruling of the Supreme Court of the District of Columbia, directing them to answer questions asked by the chief counsel of the Interstate Commerce Commission regarding expenditures of the roads for political purposes.

The Pennsylvania Railroad is distributing a colored poster warning of the danger of walking on tracks. It bears a facsimile of the standard hand signal used by crossing watchmen, a white disk with the word "Stop" in large black letters. This poster is to be displayed at places where people are accustomed to take short cuts across the tracks or to use the railroad right-of-way as a highway; also on all bulletin boards and in stations and waiting rooms.

At a meeting of the board of managers of the Station Agents' Association of the Chicago Great Western, held at Chicago on December 8, the following officers were elected for the year 1917: President, G. H. Hunt, freight claim agent; vice-president, G. A. Brown, superintendent car service; secretary, W. J. Cunningham, auditor of freight receipts, all of Chicago, Ill. The annual meeting of the association will be held at St. Joseph, Mo., on January 24, 1917.

The union labor organizations of Texas will attempt to secure the enactment of a law by the legislature of that state at its coming session in January, placing interurban railways under the jurisdiction of the railroad commission. The movement is said to have the support of the steam railroads, which are now at a disadvantage in competing for passenger traffic with the interurbans which are under no regulatory laws. The interurban companies are vigorously opposed to the proposal.

Frank Wightman, superintendent of safety of the St. Louis-San Francisco, is inducing schools along the railroad to change their time of assembly, recess or dismissal if it coincides with that of fast trains. At many points Mr. Wightman has arranged with the schools to assemble earlier than the time of the arrival of a fast train. For example, in cases where schools assemble at nine o'clock, and a train passes through the town at that hour, the assembly time has been made 8:45, and school is dismissed a quarter hour earlier. At another point a recess has been postponed until a fast train has passed.

The 720-ft. span of the Metropolis (Ill.) bridge over the Ohio river has just been swung clear of the falsework, thereby marking the successful erection of the longest simple span in the world. This bridge forms the important link to the Paducah & Illinois Railroad, a 12-mile line connecting the Chicago, Burlington & Quincy with the Nashville, Chattanooga & St. Louis, and owned jointly by the two companies. The long span weighs 4,000 tons, and was erected from falsework, entailing the

use of over 600 piles. Aside from the record length, the structure is notable for the use of silicon steel in all the main compression members and other special features. The design and construction were under the direction of the late C. H. Cartlidge, bridge engineer of the Burlington, and chief engineer of the Paducah & Illinois.

I. C. C. Changes Fiscal Year to End December 31

The Interstate Commerce Commission has issued an order that all common carriers subject to the provisions of the act to regulate commerce are required hereafter to file in the office of the commission on or before March 31 in each year, reports covering the period of 12 months ending with December 31, giving the particulars heretofore called for in the annual reports required by the commission.

A Rival to Mr. Dow

According to the St. Louis Dispatch, Louis W. Hill, president of the Great Northern, has turned his pen to the writing of scenarios. It has to do with a couple of kings and a beautiful princess. It is for the Spokane Apple show. It tells the story of King Pip IX and Princess Apple Blossom. There is a King Crab of Crabland in the story.

The Switchmen's Controversy

Horace Baker, chairman of the special conference committee of the railways, in summing up for the railways before the board of arbitration in the switchmen's controversy, said the switchmen in their demands have requested what amounts to an increase in wages of approximately 42.5 per cent, and that it would mean a heavy increase in expenses.

He also referred to the men's claim of long hours of service under adverse conditions, and said that the average time on duty for all the men involved was 10 hours and 48 minutes, with 30 per cent of crews working 10 hours or less, and spoke of how men with seniority rights always took runs with greatest number of hours. He added that the hours of service were not fixed by the railroads, but by the demands of their customers, and that an arbitrary eight-hour day was impossible in switching service. He said the high cost of living for switchmen and other employees, as well as for the railroads, is due to abnormal conditions on account of the war.

He declared that punitive overtime would mean nothing more or less than a substantial increase in pay—this for the reason that the railways at best would be compelled to continue to operate to suit the public needs as at present and not to suit their own convenience.

He said the total number of employees on railroads represented is approximately 235,400, all of whom should be taken into consideration. That there are nearly 3,700 switchmen affected by this movement. These men, as has been previously stated, comprise but 8 per cent of all of the switchmen employed in the United States, and only 1½ per cent of all the employees on the 13 roads represented in the arbitration.

Mr. Baker also mentioned that wage increases, regulation, etc., had made railway securities a poor investment with the result, for one thing, that the railway mileage built in 1915 was only about 900 miles.

S. A. Heberling, president of the Switchmen's Union, said that the cost of living had increased to such an extent as to depreciate the dollar of the switchman. He said that he and his fellows would not agree to a reduction when hard times came to the railroads.

He declared the work of a switchman was extra hazardous and for that reason should have better pay; that the Switchmen's Union was not making its demands with a club in its hand, but was basing its plea on justice, reason and facts; that the number of men should make no difference; that right should prevail whether it was 100 or 1,000,000 men involved.

RAILWAY AGE GAZETTE

Central States Conference on Transportation

The Central States Conference on Rail and Water Transportation, which is being held at Evansville, Ind., this week, is under the auspices of the Evansville Chamber of Commerce. The purpose of the conference was to bring together representative business men of the Central Western States in order that they might discuss the vital problems of railway and water transportation. Among the speakers were proponents of the viewpoints of the railway, the employee, the investor and the public. The program included the following speakers and subjects:

Henry C. Murphy, Evansville Chamber of Commerce, Chairman of the Conference—The Purpose and Scope of the Central States Conference.

One of the purposes of the conference was to discuss the feasibility of effecting a permanent organization for neighboring Central States, which will in the future afford similar opportunities for the intelligent and authoritative discussion of important transportation problems.

Operating Revenues and Expenses of Express Companies

The Interstate Commerce Commission has issued the following statement, subject to revision, from the monthly reports of operating revenues and operating expenses of the principal express companies for August, 1916:

FOR THE MONTH OF AUGUST

Item	Adams Express Co.		American Express Co.		Canadian Express Co.		Great Northern Express Co.		Northern Express Co.	
	1916	1915	1916	1915	1916	1915	1916	1915	1916	1915
Mileage of all lines covered..	45,154.98	44,930.22	74,364.85	74,260.80	12,049.93	10,238.13	9,837.99	9,568.79	8,274.70	8,233.03
Charges for transportation..	\$3,846,285	\$3,041,197	\$5,555,769	\$4,207,623	\$380,452	325,941	\$357,104	\$326,408	\$326,925	\$301,913
Express privileges—Dr.	1,885,748	1,498,955	2,712,722	2,106,437	220,090	170,060	217,165	197,723	176,246	162,260
Operations other than transp	50,410	45,793	237,391	248,645	6,067	5,370	6,041	5,066	4,583	3,999
Total operating revenues ..	2,010,947	1,588,035	3,080,438	2,349,831	166,429	161,250	145,980	133,752	155,261	143,651
Operating expenses	1,904,238	1,445,440	2,688,987	2,136,784	163,043	133,942	101,173	89,940	99,534	92,260
Net operating revenue	106,708	142,595	391,450	213,046	3,385	27,307	44,807	43,811	55,727	51,391
Uncollectible rev. from transp	613	571	1,148	365	10	13	6	48	7	16
Express taxes	22,988	17,012	45,557	35,422	4,700	4,200	5,148	4,221	5,500	5,000
Operating income	83,105	125,010	344,744	177,258	*1,325	23,094	39,652	39,541	50,219	46,375

Item	Southern Express Co.		Wells Fargo & Co.		Western Express Co.		Total for companies named	
	1916	1915	1916	1915	1916	1915	1916	1915
Mileage of all lines covered.....	34,774.60	34,728.60	107,540.75	114,622.94	5,248.89	5,232.87	297,246.69	301,815.38
Charges for transportation.....	\$1,297,275	\$977,176	\$4,339,701	\$3,355,619	\$155,064	\$124,655	\$16,258,578	\$12,660,536
Express privileges—Dr.	665,534	498,225	2,231,863	1,733,318	74,671	57,815	8,184,043	6,424,797
Operations other than transportation.....	27,873	22,617	109,739	90,228	3,704	3,200	445,812	424,921
Total operating revenues	659,614	501,568	2,217,577	1,712,529	84,096	70,039	8,520,347	6,660,660
Operating expenses	558,101	485,440	1,867,136	1,556,328	61,341	53,840	7,443,558	5,993,980
Net operating revenue	101,512	16,127	350,441	156,201	22,755	16,198	1,076,789	666,680
Uncollectible revenue from transportation.....	65	46	1,300	1,307	2	..	3,156	2,370
Express taxes	14,768	12,943	42,464	34,944	1,066	930	142,194	114,675
Operating income	86,678	3,137	306,676	119,949	21,685	15,268	931,439	549,635

FOR THE TWO MONTHS ENDED WITH AUGUST

Item	Adams Express Co.		American Express Co.		Canadian Express Co.		Great Northern Express Co.		Northern Express Co.	
	1916	1915	1916	1915	1916	1915	1916	1915	1916	1915
Charges for transportation..	\$7,546,936	\$6,140,316	\$10,687,441	\$8,554,163	\$763,266	\$633,515	\$703,522	\$640,257	\$666,222	\$630,821
Express privileges—Dr.	3,658,596	3,031,609	5,278,220	4,293,436	410,191	327,182	427,123	387,499	359,913	337,265
Operations other than transp	103,791	93,709	475,232	460,406	11,719	10,632	12,394	10,026	8,687	7,726
Total operating revenues ..	3,992,131	3,202,417	5,884,453	4,721,132	364,794	316,966	288,793	262,785	314,996	301,283
Operating expenses	3,768,870	2,895,032	5,290,872	4,218,756	321,456	270,763	198,099	181,162	202,168	186,559
Net operating revenue	223,261	307,384	593,581	502,375	43,337	46,202	90,694	81,623	112,828	114,723
Uncollectible rev. from transp	873	852	2,043	1,002	55	13	9	68	22	49
Express taxes	42,782	32,613	84,892	70,845	9,400	8,400	19,401	8,505	10,500	10,000
Operating income	179,605	273,918	506,644	430,527	33,881	37,789	71,284	73,050	102,306	104,674

Item	Southern Express Co.		Wells Fargo & Co.		Western Express Co.		Total for companies named	
	1916	1915	1916	1915	1916	1915	1916	1915
Charges for transportation.....	\$2,496,445	\$2,030,672	\$8,578,921	\$6,833,082	\$304,840	\$246,921	\$31,747,598	\$25,709,751
Express privileges—Dr.	1,269,260	1,035,849	4,403,073	3,539,612	147,032	114,007	15,953,411	13,066,462
Operations other than transportation.....	48,468	44,721	204,351	182,862	7,432	6,627	872,078	816,714
Total operating revenues	1,275,652	1,039,545	4,380,199	3,476,331	165,240	139,540	16,666,265	13,460,003
Operating expenses	1,102,349	984,050	3,675,787	3,132,594	123,126	109,809	14,682,731	11,978,729
Net operating revenue	173,302	55,494	704,412	343,737	42,114	29,730	1,983,534	1,481,274
Uncollectible revenue from transportation.....	119	117	2,892	2,189	12	12	6,028	4,305
Express taxes	29,090	26,736	80,434	69,655	2,133	1,855	278,636	228,612
Operating income	144,092	28,641	621,085	271,892	39,969	27,862	1,698,870	1,248,357

*Loss.

Alfred P. Thom, Counsel of the Railway Executives' Advisory Committee on Federal Legislation and General Counsel of the Southern Railway—The Needs of American Railroads.

John Muir, President of the Railway Investors' League—The Real Owner of the Railroad, the Investor; Why He Is Worried Over the Present Situation and How Fair Treatment Will Supply a Solution of the Present American Transportation Problems.

Frank P. Walsh, formerly Chairman of the United States Commission on Industrial Relations—The Interest of the American People in Transportation Legislation.

Clifford Thorne, Chairman of the Board of Railroad Commissioners of Iowa—Does Legislation Pay?

W. G. Lee, President of the Brotherhood of Railway Trainmen—Hours and Working Conditions of Railway Employees.

Lansing H. Beach, Colonel, United States Army, Corps of Engineers—The Improvement of the Ohio River.

Frank Trumbull, Chairman of the Railway Executives' Advisory Committee on Federal Legislation—The American Railways.

N. C. Kingsbury, Vice-President of the American Telephone & Telegraph Company—Co-operation.

The following were also scheduled to speak: G. M. Freer, president of the National Industrial Traffic League; John Russell, chairman of the transportation bureau, Detroit Chamber of Commerce; J. E. Edgerton, president, Tennessee Manufacturers' Association; J. M. Glenn, secretary of the Illinois Manufacturers' Association, and J. S. Hazelrigg, president of the Indiana Grain Dealers' Association.

Illinois Manufacturers Warned of Strike Danger

At the annual meeting of the Illinois Manufacturers' Association at Chicago, on December 7, Samuel M. Hastings, who was re-elected president, emphasized the necessity of the business interests of the country bringing influence to bear to prevent a strike by the railroad trainmen's brotherhoods in January. He said in part: "Great crises often have taken place before the public has been fully aroused, such as the war in Europe and the firing on Ft. Sumter. Are we to meet a similar situation in January? Nothing of importance will take place if the industrial men of this country and the business men generally will give the situation the attention it deserves. If we slumber and allow it to get into the hands of those who wish to force class legislation, the battle next time may not be one of ballots."

Theodore P. Shonts, president of the Interborough Rapid Transit Company of New York, made the principal address before the association and said in part:

"This country will not get far in meeting the competition of other nations if its workmen force higher wages or shorter hours than capital can grant with profit to itself and meet the condi-

tions imposed by international competition. The laboring men of this country will not permanently advance their own interests if they enforce in our domestic development demands so great that capital cannot be secured for our normal expansion. Paralysis is not a sign of health nor atrophy of enduring vigor. The laboring men of this country need to guard against the predatory spirit in the union just as they do against the predatory spirit in the corporation. Force without fairness spells failure."

California Railroad Commission Report

The banner year's business in the history of public utilities in California is detailed in advance sheets of the annual report of the State Railroad Commission. The total operating revenue of California public utilities, including the entire business of the interstate railroads, which has not been segregated by them, was \$384,617,734. The operating expenses were \$249,303,932, leaving a net operating revenue for the year of \$135,313,802. These figures do not reflect the very great increase in the earnings of the steam railroads during the fiscal year ending June 30, 1916, for which the data is not yet completely available.

Under regulation by the Railroad Commission and notwithstanding general financial depression, the net operating revenues of California utilities were \$2,879,708 greater in 1915 than in 1913 and \$5,710,327 greater in 1915 than in 1914.

During the years 1913, 1914 and 1915 additions, betterments and new construction were made by the California steam railroads at a cost of \$55,048,885.

Considerably in excess of \$200,000,000 in cash has gone into the further development of California public utilities during the period of supervision and regulation by the Railroad Commission.

From January 1, 1911, to June 30, 1916, the Railroad Commission rendered 2,704 decisions in formal proceedings, and from January 1, 1912, to June 30, 1916, over 9,000 decisions in informal proceedings. No decision of the Railroad Commission establishing a public utility rate or a public utility valuation has been reversed by the courts. The most recent available data of the activities of Commissions in the fourteen most populous states of the union show that, excepting California, the New York Public Service Commission of the Second district was the highest with a total number of formal and informal decisions of 2,748.

Under the authority of the Railroad Commission the main track steam railroad mileage constructed in California from January 1, 1911, to June 30, 1916, was 686 miles. The following steam railroads are now engaged in actual construction work: the California Southern, the Patterson & Western, and the Hetch Hetchy Valley Railroad. Construction work is starting on an extension of the Minkler Southern from Lindsay, Tulare county, south, a distance of approximately 30 miles and on the Indian Valley from near Keddie, Plumas county, in a north-easterly direction, to Eagle Camp No. 2, known as Lower Camp, a distance of approximately 27 miles. The construction of main track mileage from January 1, 1911, to June 30, 1916, represents an expenditure of approximately \$34,300,000. New station buildings have been erected in California by the Southern Pacific and the Atchison, Topeka & Santa Fe subsequent to January 1, 1911, as follows:

Los Angeles, \$690,000; San Francisco, \$1,000,000; San Diego, \$300,000; Richmond, \$20,000; Sisson, \$6,000; Berkeley \$15,000; Burlingame, \$5,000; Davis, \$8,000; Empire, \$10,000; Earlimart, \$5,000; Suisun, \$6,000; Turlock, \$10,000; Visalia, \$15,000; Modesto, \$15,000. Total \$2,105,000. The Railroad Commission is making a complete survey, by districts, of all railroad grade crossings in California, and is working, in co-operation with the railroads and the local authorities, to secure the elimination, insofar as reasonably possible, of danger at railroad grade crossings. This survey will undoubtedly lead to proceedings to eliminate gradually the most dangerous of the existing railroad grade crossings. The Railroad Commission has directed the installation of safety devices at railroad grade crossings, has eliminated unnecessary grade crossings where possible and has investigated each railroad accident. Negotiations to secure a more rapid block signaling of the line of railroad of the Atchison, Topeka & Santa Fe in California are now pending.

American Association of Railroad Superintendents

At a meeting of the executive committee of the American Association of Railroad Superintendents, held in St. Louis last Friday, it was decided to hold the annual meeting of the association at Minneapolis, August 8 to 10, inclusive, 1917.

Master Boiler Makers' Association

The eleventh annual convention of the Master Boiler Makers' Association will be held May 22 to 25, 1917, at the Hotel Jefferson, Richmond, Va.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, 455 Grand Central Station, Chicago. Next meeting, January, 1917, New York.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, Supt. Timber Preservation, B. & O., Mt. Royal Sta., Baltimore, Md. Next convention, January 23-25, 1917, New York.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Ry's, 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 2511 Oliver Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3d Tuesday, Pittsburgh, Pa.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month. Room 1856, Transportation Bldg., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.

RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 30 Church St., New York. Next annual meeting, January 16, 1917, Waldorf-Astoria Hotel, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial Annex Hotel, Pittsburgh.

RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 A. M., Piedmont Hotel, Atlanta.

TOLEDO TRANSPORTATION CLUB.—Harry S. Fox, Toledo, Ohio. Regular meetings, 1st Saturday in month, Boody House, Toledo.

TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.

UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.

WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Man. Regular meetings, 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.

WESTERN SOCIETY OF ENGINEERS.—E. N. Layfield, 1735 Monadnock Block, Chicago. Regular meetings, 1st Monday in month, except January, July and August, Chicago. Extra meetings, except in July and August, generally on other Monday evenings. Annual meeting, 1st Wednesday after 1st Thursday in January, Chicago.

Traffic News

The Railroad Commission of Louisiana has issued an order adopting the demurrage tariff recently put into effect by the Interstate Commerce Commission for application in intrastate traffic.

November, 1916, was the record month for American ship building. The American yards completed 90,636 gross tons, all officially numbered for the American flag except two steamers of 7,847 gross tons for Norwegian owners.

The "Stonemen," of Philadelphia, members of a religious organization who visited New York City on Sunday last, made up a little excursion of 5,480 passengers. They traveled in 11 special trains, over the Philadelphia & Reading and the Central of New Jersey.

The National Rivers and Harbors Congress held its annual convention at Washington on December 6, 7 and 8. At its concluding session the convention adopted lengthy resolutions in favor of a public policy of waterway improvements and the enactment of annual rivers and harbors bills. The resolutions called for a complete co-ordination of service between the railroads and waterways, and Congress was asked to empower the Interstate Commerce Commission to fix minimum as well as maximum rates.

The inspectors of the Department of Agriculture in charge of the enforcement of the Food and Drugs Act, have found several interstate shipments of packages of fruits and vegetables, such as grapes, tomatoes and berries, which contain no statement on the packages as to the quantity of contents. The Federal Food and Drugs Act now requires that all packages of foods which are shipped into interstate or foreign commerce shall be marked with a statement of the quantity. Several shippers have been cited to hearings for violating the law.

From an advertising investment of \$15,000, four roads serving Colorado received a return of \$90,000, without specific mention of the names of any of the roads in the advertising matter. The campaign was carried on by the Denver Tourist Bureau, which expended \$50,000, altogether, to which sum Colorado business interests contributed \$35,000, while the railroads contributed the remainder, as follows: Union Pacific, \$5,000; Chicago, Burlington & Quincy, \$5,000; Colorado & Southern, \$2,500; Denver & Rio Grande, \$2,500. Of 9,855 prospective tourists who during the past year sent inquiries to the bureau with reference to transportation, 30 per cent bought tickets on one or more of the roads mentioned.

The traffic through the Panama canal is assuming normal proportions. The cargoes carried through the canal in October, 1916, aggregated 647,893 tons, exceeding the average for the months since the reopening of the canal in April, 1916, by 79,915 tons, and being surpassed only by three months since the opening on August 15, 1914. In the six months from May 1 to November 1, 1916, 856 ships passed through the canal, aggregating 2,612,916 net tons, carrying 3,493,105 long tons of cargo. This record is only a little below that for the six months preceding September, 1915, the period of heaviest traffic through the canal. During that time 872 ships used the waterway, aggregating 2,943,103 net tons, and carrying 3,620,592 long tons of cargo.

Twenty-seven all-Pullman special trains are carrying delegations from all parts of the country to a convention of Willys-Overland dealers at Toledo, Ohio. Over 5,000 dealers will make the trip, arriving and leaving at different times during the 19 days from December 4 to December 23. Twelve trains from western points travel over the New York Central from Chicago to Toledo. Indicative of the widely divergent points from which the convention will draw are the following trains: The Pacific Coast Special, leaving Seattle, Wash., on December 1; Portland, Ore., and Los Angeles, Cal., on December 2; San Francisco on the third, and Ogden on the fourth; the Lone Star Special, leaving Houston, Tex., on December 9; the New England Special, leaving Portland, Me., and Boston, Mass., on December 12;

the Capital Special, leaving Washington, D. C., and Roanoke, Va., on December 5; the South Atlantic Special, leaving Raleigh, N. C., and Columbia, S. C., on December 2; and the Northwest Special, leaving Butte, Mont., on December 8.

In a statement to the press, J. W. McClymonds, general agent of the Pacific Fruit Express, asserted recently that the shortage of refrigerator cars can be considerably relieved if cars are loaded to maximum rather than to minimum weights. He pointed to the unusual measures taken by the carriers to reduce the car shortage, among which he made special mention of the placing of special agents at all large loading and receiving stations to hasten the release of cars. Material assistance can be rendered also by the shipper and consignee. If eastern buyers in ordering would request shippers to furnish maximum instead of minimum cars, the benefit would be widespread. In the case of potatoes the minimum weight per car is 30,000 lb., whereas they could well be loaded to 35,000 or 40,000 lb. without damage to the freight. The minimum weight for apples is also 30,000 lb., and he says that this fruit, if boxed, could easily be loaded to 40,000 lb. or better. The same possibility exists with reference to casabas, sweet potatoes, celery, other vegetables and citrus fruits. He stated that shippers of citrus fruit had been induced to load cars seven boxes wide instead of six. If all cars were thus loaded, the California crop would require 45,000 cars, whereas under the old loading 50,000 are required.

At a hearing in the United States district court before Judges Evans, Landis and Carpenter upon the application of Illinois railroads for a temporary injunction restraining the State Public Utilities Commission of Illinois from interfering with the filing of intrastate passenger tariffs, based on 2.4 cents a mile, the court ordered, upon motion of the attorney general of Illinois, that the United States of America and the Interstate Commerce Commission be made parties defendant to the respective bills. The plaintiffs' motion for a temporary injunction was continued until the final hearing of the case, which will be held on January 3. Leave was granted to plaintiffs to file supplemental bills until December 16, and defendants were ordered to have their answers on file before December 18. The effective date of the order of the Interstate Commerce Commission, dated October 17, 1916, for the removal of existing discrimination between intrastate and state passenger fares is January 15, 1917. Until after the hearing on January 3, assuming that it will be concluded on or before January 15, it is thought unnecessary to make any application to the Interstate Commerce Commission for an extension of the effective date of the order. Until that time, however, the present intrastate rate of 2 cents will continue to be in effect.

New England Traffic Club

The New England Traffic Club at its meeting in Boston, December 7, elected as president C. W. Robie, New England manager of the American Express Company. Other officers elected were: James H. Eustis, H. M. Biscoe, General William A. Bancroft, and A. H. Van Pelt, vice-presidents, and C. A. Anderson, secretary-treasurer.

Railroad Freight Embargoes

The New York, New Haven & Hartford has materially modified its embargoes on freight, and reported, on Wednesday of this week, that congestion of freight has been relieved at many places; but the restoration of normal movement is by no means complete. Embargoes were announced by a number of important roads during the past week. The New York, Chicago & St. Louis had to refuse eastbound freight from its western connections. The Grand Trunk was unable to take eastward from Detroit river all the freight offered west of there. The Pennsylvania refused much freight, both westbound and eastbound, through Pittsburgh. The Baltimore & Ohio was this week refusing all grain consigned to Locust Point, Baltimore, either for export or domestic use. The New York Central announced on Saturday last that nothing from points west could be taken east of Buffalo except live stock and perishable food-stuffs. The Wabash refused grain in carloads to points east of Detroit. The Erie was so crowded that similar action was taken at points west of Marion, O. At Pittsburgh there was discus-

sion of a proposition for a general closing of factories during the holidays, so as to allow the railroads to catch up with shipments. At Cleveland, O., and Youngstown, O., shortages of coal and various embargoes on outgoing merchandise threatened to cause the stopping of work at important plants.

Pictures of New England

"New England, Its Beauties and History," is the title of a group of five illustrated lectures given by E. S. Jones, official photographer of the Boston & Maine Railroad; and from a circular which has been issued by the railroad company it appears that these lectures are available anywhere for any gathering wishing to pay the small expenses of Mr. Jones' visit—which expenses do not include railroad fare. He is about to make a trip through southern and western New York state, western Pennsylvania and other regions, as far west as Iowa, along lines of railroad with which the Boston & Maine has through car arrangements.

Mr. Jones in his lectures advertises New England, not the Boston & Maine Railroad—a notable instance of modesty on the part of a railroad company. However, the Boston & Maine is such a prominent factor in the life of northern New England that the lecturer's name is, no doubt, one of the most profitable of those on the payroll of the passenger department. Mr. Jones has made photographs and lantern slides for this railroad for 25 years.

Car Service Commission to Post Names of Delinquent Roads

Fairfax Harrison, president of the Southern Railway and chairman of the American Railway Association's Commission on Car Service, has advised the Interstate Commerce Commission that the association proposes to use publicity against railroads that refuse to co-operate in efforts to relieve the car shortage. The Car Service Commission has also issued a notice to the members of the American Railway Association in which, among other things, it says that: "The commission is gratified by the extent to which co-operation is manifested on the part of a majority of railroads, but regrets that a number have not yet accorded it to the same extent. In justice to those who are co-operating, and in order to perform its duties equitably, the Commission on Car Service proposes to make public the names of the roads which do not comply with its request for information and for action. . . ."

The instructions issued by the Car Service Commission call for the return of cars to the owning railroads, as heretofore announced, and for the use of drastic embargoes to prevent sending to congested points freight which cannot be disposed of promptly.

CUBAN RAILWAY CONSTRUCTION.—The President of Cuba signed a decree on November 16 granting the Compañía del Ferrocarril del Norte de Vuelta Abajo a subsidy of \$6,000 per kilometer (\$9,650 per mile) for the construction of a railway connecting the city of Pinar del Rio and the port of Esperanza on the north coast, with a connecting branch to La Palma.—*Commerce Report*.

NEW GERMAN RAILWAY CARS.—The cars of the famous Wagons-lit Company, so familiar to Americans traveling on Continental railways, will, so far as German railways, and probably her allies' railways, are concerned, be replaced by similar but thoroughly modernized cars of a new German company, which has just been founded, with the modest capital of \$1,000,000. The old French-Belgian company had a monopoly in nearly the whole of Europe to run its sleeping cars, dining cars, and parlor cars over the various railways, and the famous trains, such as the North and South Express, connecting Petrograd and Constantinople with the west of Europe, were composed entirely of wagons-lit. When the war broke out, this French-Belgian service ceased abruptly, and its handsome cars have since been turned into rolling hospitals and carry the wounded from the battle-fields, instead of bridal couples on their honeymoon trips, as in peace time. Even before the war the Prussian-Hessian Union of State Railways decided not to renew the contracts with the French-Belgian company, but create a service of its own. Since the beginning of the war the new company has been forming, in which Austrian, Hungarian and German capital participate proportionately.

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The commission has denied a petition of the Bangor & Aroostook for an order directing the postmaster general to weigh the mails on its road.

The commission has issued an order vacating its suspension of tariffs of the Canadian Government Railways in connection with its order of July 27 in the New England lumber rate case.

The commission has suspended until June 13, 1917, proposed increases in a tariff issued by F. A. Leland in the carload minimum weights of grain screenings, oat clippings and elevator dust.

The commission has suspended proposed increased rates in a tariff issued by F. A. Leland on cattle from New Orleans and other points in Louisiana to various stations in Texas, including Galveston.

The commission has suspended a proposed cancellation of joint rates on grain, grain products and other commodities from stations in Oklahoma on the St. Louis-San Francisco to Little Rock, Ark., and other points taking the same rates or basing thereon.

The commission has been compiling information for the use of the department of justice in its investigation of causes for the recent advances in prices of many commodities. The commission has been asked to furnish data to aid in the investigation of reports that at the time of the recent rise in coal prices on account of an apparent shortage, hundreds of loaded cars were held in railroad yards in the middle west under demurrage.

Fares from Chicago to San Francisco

Public Service Commission of Washington v. Alabama & Vicksburg et al. Opinion by Commissioner Daniels:

The commission finds that the all-year excursion passenger fare and summer tourist excursion passenger fare from Chicago to San Francisco, Cal., applicable in either direction by way of Seattle, Wash., or Portland, Ore., are prejudicial to the extent that they exceed the corresponding fares from Chicago to San Francisco, applicable in either direction by way of New Orleans, La., or El Paso, Tex. Complaints against the higher fares via the northern routes were made largely on the part of the hotel keepers, commercial clubs, etc., of Tacoma, Seattle, Portland, Spokane and other cities. (42 I. C. C., 54.)

Rates on Yellow Pine

Wisconsin & Arkansas Lumber Company et al. v. St. Louis, Iron Mountain & Southern et al. Opinion by Commissioner Daniels:

Rates on yellow-pine lumber from Little Rock and Malvern, Ark., to Thebes and East St. Louis, Ill.; St. Louis and Kansas City, Mo., and Wichita, Kan., are not found unreasonable.

Rates on yellow-pine lumber from Malvern to Memphis, Tenn., and from Malvern and Little Rock to Springfield, Carthage and Joplin, Mo.; Pittsburg, Coffeyville and Fort Scott, Kan., and Wagoner, Okla., are found unreasonable, and reasonable maximum rates prescribed. (41 I. C. C., 642.)

Lumber Rates from Helena, Ark.

In re lumber rates from Helena, Ark., and other points to Omaha, Neb.; Des Moines, Ia., and other destinations. Opinion by Commissioner Hall:

Tariffs proposing increased rates on yellow-pine, cypress and hardwood lumber from southwestern points and points in Mississippi and eastern Louisiana to the Omaha group and other destinations were canceled in compliance with an order issued in connection with the commission's first report in this case, 33 I. C. C., 297. Upon rehearing, in connection with various fourth section applications, the rates formerly filed are found to be justified. Fourth section relief is granted lines having cir-

citous routes, but other fourth section relief denied. (41 I. C. C., 565.)

Passenger Fares on the Illinois Traction System

St. Louis, Mo.-Illinois Passenger Fares. Opinion by Commissioner Clements:

By the tariff under investigation in this proceeding the Illinois Traction System proposed to increase from 5 cents to 10 cents the fares over its line of electric railway between St. Louis, Mo., and points in the towns of Venice, Madison, and Granite City, Ill., north of the Main street station in Venice. New commutation fares and strip tickets are also proposed. The commission finds that these increased fares are justified. It also holds that interstate fares prescribed by a municipal ordinance are not conclusively presumed to be reasonable, even if accepted by the interstate carrier as one of the conditions of a franchise.

The St. Louis Electric Terminal Railway Company is held to be a common carrier of passengers and freight in interstate commerce, and as such it is subject to the jurisdiction of the commission.

A tariff item providing for the sale of commutation tickets valid only during specified "rush" hours is tentatively approved. (41 I. C. C., 584.)

Rates from Des Moines, Ia.

Greater Des Moines Committee v. Chicago, St. Paul, Minneapolis & Omaha et al. Opinion by Commissioner Daniels:

Upon complaint that rates between Des Moines, Iowa, and points in Missouri, Nebraska, Minnesota, North Dakota and South Dakota are unreasonable and prejudicial; the commission holds that

Rates between Des Moines and points in Missouri are not shown to be unreasonable or prejudicial to Des Moines except where certain of such rates, increased since January 1, 1910, exceed rates fixed by the mileage scale prescribed by the commission in Missouri River-Nebraska Cases, 40 I. C. C., 201. Reasonable rates are prescribed as maxima for the future.

Rates between Des Moines and points in Nebraska are not passed upon; rates between Des Moines and South Dakota and North Dakota are held prejudicial to Des Moines and unduly advantageous to certain Mississippi river crossings, where certain differentials are not observed; reasonable differentials are prescribed.

Rates between Des Moines and Minnesota points are not shown to be unreasonable or prejudicial to Des Moines except as to stations on the Rock Island 50 miles or less north of the northern boundary of Iowa, and reasonable maximum rates prescribed for said points. (42 I. C. C., 65.)

Hearing on Shreveport Case

The attorney general of Texas, appearing on behalf of the Texas Railroad Commission, and representatives of Texas shippers presented oral arguments before the Interstate Commerce Commission on December 6 and 7, urging the commission to reopen the Shreveport rate case on the ground that the Texas commission had not heretofore been a party to the case, and that Texas shippers should be afforded an opportunity to show that the railroads, in removing the discrimination against Shreveport, have so increased the Texas rates as to injure the commerce of the state. In explaining why the Texas commission had not taken any part in the proceedings heretofore, Assistant Attorney General Nickels said that the commission had never realized that under authority from the interstate commission the railroads could violate the provisions of their Texas charters. The Louisiana commission, the original complainant in the case, was not represented, but it sent a message to the commission stating that it was not opposed to a reopening of the case, nor to allowing other parties to take part. George T. Atkins, representing the Shreveport chamber of commerce, opposed the reopening of the case, and pointed out the benefits which had already accrued to Shreveport by the removal of the discrimination created by the lower Texas rates, which he said had attracted new manufacturers to his city, and had brought new customers to Shreveport concerns that had formerly been shut out of the state. J. W. Terry, attorney for the Gulf, Colorado & Santa Fe; H. M. Garwood, attorney for the Sunset-Central Lines, and Gentry Waldo, general freight agent of the

Sunset-Central Lines, opposed the reopening of the case. Mr. Garwood said that if there was to be further litigation, as threatened by the Texas authorities on the ground that the railroads had violated their charters, it might as well begin now without waiting for a new decision by the commission. Mr. Waldo answered the contention that Texas rates have been advanced beyond the level of rates in the surrounding states by saying that it is the purpose of the roads to advance interstate rates from Kansas, Oklahoma and other territory affected by the adjustment to remove the depression in them caused by the influence of the former Texas scale of rates. In reply to questions by Commissioner Clements, Mr. Waldo said that the only remedy for such situations was exclusive federal control of rates.

STATE COMMISSIONS

The Tennessee Railroad Commission has authorized the adoption, on short notice, of revised demurrage rules similar to those adopted for interstate commerce.

At a hearing before the Illinois Public Utilities Commission in Chicago on Wednesday, shippers and railroads agreed on demurrage rates, for all commodities, to correspond with those approved by the Interstate Commerce Commission for interstate business. The discussion of reconsignment regulations was postponed until next week.

The Pennsylvania Public Service Commission, in an opinion by Chairman Ainey, holds that "jitney buses" are subject to the authority of the commission. The act of June 1, 1915, authorizing cities to regulate and license motor vehicles, does not affect this authority. Chairman Ainey says that the act creating the Public Service Commission and defining its duties makes it necessary for "jitney" men to obtain a certificate of public convenience. They must also obtain a city license in case the municipalities have any ordinance prescribing motor vehicle regulations. The case came before the commission on complaint of the Wilkes-Barre Railway Company.

PERSONNEL OF COMMISSIONS

James Blaine Walker, of New York, has been appointed acting secretary of the National Association of Railway Commissioners, in place of William H. Connolly, deceased. Mr. Walker, hitherto assistant secretary of the association, is secretary of the New York State Public Service Commission, first district, and his office is at 120 Broadway, New York City.

Lawton T. Hemans, chairman of the Michigan Railroad Commission, announcement of whose death at the Battle Creek Sanitarium, Battle Creek, Mich., on November 17, has previously

been made in these columns, was born November 4, 1864, at Collamer, Onondaga County, N. Y. A year later his parents moved west and in 1868 settled in Mason, Ingham County, Mich. He received his early education in Mason and vicinity, graduating from the High School at Eaton Rapids, Mich., in 1884. For a time he worked upon his father's farm and taught school, later choosing the profession of law and matriculating at the University of Michigan in 1889. Upon graduating from the legal department of this institution

he became associated with the law firm of Huntington & Henderson, of Mason, Mich. In 1891 he was elected mayor of Mason, and subsequently was re-elected for several terms. He was elected a member of the legislature in 1901, and a little later became minority leader. When the State Constitutional



L. T. Hemans

Convention was called in 1907 he was chosen a delegate, and in the following year, and again in 1910, he was nominated for governor, but both times was defeated. Chase S. Osborn, who in 1910 defeated him for governor, later appointed him a member of the Michigan Railroad Commission. In January, 1913, he was elected chairman. During his service as a commissioner he contributed much to the conservative extension and application of utility regulation, and his opinions have been uniformly sustained by the Michigan Supreme Court and the Supreme Court of the United States, when appeals have been carried to them. He found time to interest himself in various quasi-public institutions, such as the Michigan Pioneer Historical Society and the Michigan Historical Commission, of which latter organization he was president. He was a contributor to a number of high-class publications on historical and kindred subjects. At his death he was just completing a biography of Michigan's first governor, Stephen T. Mason.

COURT NEWS

Safe Place to Work

A foreman placed two gangs at work 32 feet apart spiking rails, but the rear gang worked up to the other, and one man was struck by a sledge. The Indiana Appellate Court held that the railroad was not chargeable with having placed the men in a dangerous place, in the absence of orders to work together, or with knowledge that the two gangs had worked together.—N. Y. C. & St. L. v. Allen (Ind.), 113 N. E., 315.

Contributory Negligence of Freight Conductor

A freight conductor, without authority from the yardmaster to use a track, and without examination of the track to see if it was clear, stood on the rear end of the engine to show a light in backing down on the track; and was killed in a collision with standing cars. In an action for his death, the Supreme Judicial Court of Massachusetts holds that his own negligence was the proximate cause of his death, and recovery could not be had under the federal employers' liability act.—Gillis v. N. Y. N. H. & H. (Mass.), 113 N. E., 212.

Construction Contract

A railroad construction contract provided that the amount finally due the contractor should be estimated by the railroad's chief engineer. In an action for balance due, the Illinois Supreme Court holds that a final estimate by a subordinate engineer in immediate charge of the work was not binding on the company. By the contract the monthly estimates were not binding for any purpose. It is held that the making of monthly payments on estimates made by the engineer in charge, and approved by the chief engineer, did not estop the railroad company from rejecting the subordinate engineer's final estimate.—Costello v. Delano (Ill.), 113 N. E., 689.

Published Tariffs Binding on Shippers

Where a sliding scale of charges, based on the value of the articles carried, is provided in the tariffs filed with the public utilities commission of the state, the Ohio Supreme Court holds that it is the duty of the carrier to require the shipper to declare the value, and to demand and collect from him the rate fixed. Where a copy of this tariff, or so much thereof as the commission shall deem necessary, is printed in plain type and kept on file or posted in such places and in such manner as the commission may order, shippers and travelers are charged with notice of the rates named in the tariffs, and must abide thereby, unless they are found to be unreasonable by the state commission.—Erie v. Steinberg (Ohio), 113 N. E., 814.

Limitation of Liability—Time for Notice of Loss

The North Carolina Supreme Court holds that a clause in a bill of lading requiring notice of loss or damage within ten days is invalid, the time being unreasonably short. It holds that reasonableness of time does not depend on whether goods are perishable or not, the same rule applying in any event. Where stipulations for filing notice of loss are reasonable and valid, the written notice of loss need not be expressed in any special way

if it is a plain and intelligible statement of the demand.—Phillips v. S. A. L. (N. Car.), 89 S. E., 1,057.

Not Libel to Carry Intoxicating Liquor Billed in Assumed Name of Another

An action for libel was brought against a railroad company asking damages because of its custom of delivering whisky in the plaintiff's name, for the purpose of concealing the identity of the real consignees. The barrels were marked as containing whisky and labeled to the plaintiff. The Georgia Court of Appeals holds that the plaintiff had no right of action against the railroad. Under the rules of the Georgia railroad commission the railroad was bound by law to notify the named consignee of the arrival of the whisky. Under these rules, though the road had been notified through one of its agents that the plaintiff had not ordered any intoxicating liquors and would not receive any, it was still its duty to address a notice by mail to one of the name in which the freight came, or to notify him personally, and for so doing it could not in any way be held liable in damages. Notwithstanding that it may be a violation of law for a common carrier to deliver intoxicating liquors to a person using an assumed or fictitious name, even if it be the true name of another person, and though the receipt be signed in the assumed or fictitious name, it does not give a right of action for libel against the carrier to the person whose name is thus assumed.—Knight v. Georgia Southwestern & Gulf (Ga.), 90 S. E. 81.

Hill Roads Win Tax Suit in Minnesota

The suit of Ramsey county, Minn., against the Great Northern and the Northern Pacific for delinquent taxes on stocks and bonds of the Chicago, Burlington & Quincy, the Spokane, Portland & Seattle, and other properties has been decided favorably to the railroads by the Ramsey county district court. The Great Northern was assessed by the auditor of the county as the owner of stock in the Chicago, Burlington & Quincy, stocks and bonds in the Spokane, Portland & Seattle, and upon stocks and bonds and advancements in numerous town site companies, coal companies and lumber companies, and upon other minor securities which it owned out of the ordinary course of its business. The resulting tax for one year amounted to over \$3,000,000, of which the tax on stocks other than the Burlington and the Spokane, Portland & Seattle securities made up only \$19,000. The Northern Pacific was assessed upon its ownership, with the Great Northern, of Burlington and Spokane, Portland & Seattle securities, and a few other securities of insignificant value. This resulted in a tax assessment of something less than that against the Great Northern. The Chicago, St. Paul, Minneapolis & Omaha was also assessed on such bonds as it owned in subsidiary terminal companies, the tax amounting to less than \$10,000. If the right to the collection of these taxes had been established it could have been enforced retroactively over the past 17 years.

The question at issue was whether or not the railroads in paying to the state 5 per cent of their gross earnings, in lieu of all other taxes upon property owned or operated for railway purposes, paid their taxes upon these stocks and bonds, or whether, as contended by the state, their payment of the 5 per cent was equivalent to paying a tax only upon their properties literally used in the operation of their railway lines. If the latter contention had been upheld by the court, the railroads' securities would have been taxable on an ad-valorem basis in the same manner as if they were owned by an individual. The district judge held that the Great Northern and the Northern Pacific owned and used the Burlington and the Spokane, Portland & Seattle stocks and bonds in the operation of their railway lines, and that taxes upon them were assessed and fully paid through the gross earnings tax. As to the stocks in coal, lumber and other companies owned by the Great Northern, the court held that they were not included in the gross earnings tax and were taxable. He ordered judgment against the Great Northern accordingly for \$19,000. There was a similar decision in the Northern Pacific case, but the court held that even as to the lesser stocks held by the Northern Pacific, no tax was collectible because the state had no jurisdiction to tax a foreign corporation. No decision has been rendered in the Omaha case, but as this road is also a foreign corporation, the judgment of the court is likely to be favorable to the railroad. The state

will appeal all cases to the Supreme Court of Minnesota, where the matter is expected to be heard in April or May next.

Uniform Bills of Lading—Compression of Cotton

Action was brought in New York on a bill of lading issued by the defendant railroad for the value of a shipment of cotton destroyed by fire at Houston, Texas. The facts were undisputed. The cotton was delivered to the carrier at El Centro, California, for shipment to New Orleans, on a uniform bill of lading. The written parts of the bill of lading were filled in by a member of the consignor firm with the words: "To be compressed at Cleveland Compress Company, Houston, Texas." It was upon the effect of these words the case rested. The bill of lading was signed by the railroad's agent at El Centro. The cotton was shipped to the compress company's plant, and while there was destroyed, by no fault of the railroad, in a fire which consumed the plant and a great part of the city. When shipped the cotton was contained in plantation bales. Compression reduces the bulk to about one-third the original size, and has been held to be mainly for the railroad's benefit (Matter of Compression of Cotton, 29 I. C. C. 585), and a much lower rate of freight is charged for the carriage of compressed than of uncompressed cotton. The rate paid by the shipper was the lower rate filed by the carrier for compressed cotton. The only option given to the shipper by the company's filed rules and regulations regarding compressed cotton was to require by indorsement on the bill of lading that the cotton should be delivered uncompressed at the higher rate. If he does not so require, it is in the discretion of the carrier whether the compression shall take place at point of origin, in transit, or at destination. It was conceded that if the bill of lading had been silent as to the place of compression, the railroad would have been liable, under the terms of the bill of lading, because the compressor would have been deemed the agent of the carrier. The railroad, however, claimed that by the indorsement the shipper made the compress company its agent for the process of compression, that transportation and custody by the railroad had been interrupted, and the cotton was in the hands of the shipper's agent. This claim was based on a condition in the bill of lading providing that except in case of negligence of the carrier or party in possession, "the carrier or party in possession shall not be liable for loss, damage, or delay occurring while the property is stopped and held in transit upon the request of the shipper, owner, or party entitled to make such request."

The decision of the New York Appellate Division was based mainly on the fact that the tariffs filed by the railroad contained nothing conferring on a shipper or owner of cotton any right to select the place at which his cotton is to be compressed. It held that the railroad could have ignored the request in the indorsement, that its selection of Houston as the place of compression was voluntary, and that it was liable for the loss. Mr. McLaughlin, J., dissented on the ground that when the shipper designated the place for compression in the bill of lading, it was for the railroad either to refuse to accept the shipment on the terms stated or else to deliver the cotton at the place designated; that its delivery to the compress company was a stoppage and holding in transit on the request of the shipper, and that the railroad was exempted from liability under the above quoted provision of the bill of lading. *D'Utassy v. Southern Pacific*. (November, 1916.)

UNITED STATES SUPREME COURT

The Supreme Court of the United States on December 4 issued a decision affirming the decision of the lower court, sustaining a damage verdict of \$145,130 against the Pennsylvania Railroad obtained by the Sonoman Shaft Coal Company of Cambria County, Pa., for failure to furnish cars for the shipment of coal.

Carrier Need Not Furnish Special Cars

The Supreme Court on Monday of this week decided that the Interstate Commerce Commission has no authority to require railroads to furnish oil tank cars on request by shippers. The court sustained the decision of the district court for the western district of Pennsylvania, enjoining an order of the commission directing the Pennsylvania Railroad to furnish tank cars to the Crew-Levick Company. A similar case involving the Pennsylvania Paraffin Company was decided similarly.

Necessity for Notice of Claim for Damage

A shipper sued for injuries to a horse transported from Lexington, Ky., to Seebert, W. Va., under a uniform live stock contract, providing that no claim for damages should be allowed or sued for unless claim be made in writing, verified, to the company's claim agent at his office in Richmond, Va., within five days from the removal of the stock from the car. Such verified claim was not made. The United States Supreme Court held the agreement to be on its face unobjectionable, and nothing was shown tending to establish circumstances rendering it invalid or to excuse failure to comply therewith. Following *Northern Pacific v. Wall*, 241 U. S. 87, and *Georgia, Florida & Alabama v. Blish Milling Co.*, 241 U. S. 190, decided earlier in the year, the court reversed a judgment for the plaintiff.—C. & O. v. McLaughlin (decided December 4, 1916).

Long and Short Haul Rates—Commission's Powers

The long litigation, begun in 1910 by application by six railroads, under section 4 of the act to regulate commerce, for relief in respect to westbound transcontinental commodity rates, has resulted in a decision by the Supreme Court of the United States, briefly reported last week, page 1066, reversing the district court's decision that the Interstate Commerce Commission had no statutory power to grant the relief which it did, because it was not the precise relief applied for. Section 4, as amended in 1910, empowers the commission, "upon application," to authorize a carrier "to charge less for longer than for shorter distances." The Supreme Court said: "These carriers asked leave, among other things, to charge on westbound transcontinental freight to about 193 coast and interior cities much less than to intermountain territory. The commission permitted them to charge, to eight of these cities which were ports, *as much less* as the application requested; but as to the other 185, which were interior cities, including the four complaining here [Sacramento, Stockton, San Jose and Santa Clara], permitted the carriers to make the rates only *somewhat less*. In other words, the commission granted a part of the relief asked. The district court says it had no power so to do. But there is nothing in the act to justify limiting the power of the commission to either a grant or a denial *in toto* of the precise relief applied for. Such a construction would make section 4 unworkable, and defeat the purpose of the amendment. It is at variance with the broad discretion vested in the commission and the prevailing practice of administrative bodies."—United States, I. C. C., Atchison et al. v. Merchants' and Manufacturers' Traffic Assoc. of Sacramento (decided December 4, 1916).

Switching for Competitors

The Nashville case, briefly reported last week, was a suit for a preliminary injunction against the Louisville & Nashville, the Nashville, Chattanooga & St. Louis, and the L. & N. Terminal, to restrain the enforcement of the order of the Interstate Commerce Commission to abstain from refusing to switch interstate competitive traffic to and from the tracks of the Tennessee Central at Nashville on the same terms as interstate non-competitive traffic. The injunction ordered by the Supreme Court of the United States, forbidding the commission to compel the older roads to switch for the Tennessee Central as cheaply as for each other, is to be issued "without prejudice to the commission's making orders to prevent the appellants from discriminating between competitive and non-competitive goods, so long as they open their doors to both, the appellants being entitled to reasonable compensation, taking into account the expense of the terminal that they have built and paid for." Mr. Justice Holmes, in delivering the opinion, said, in part: "The fact principally relied upon to uphold the order of the commission is that, instead of each road doing its own switching over the terminals used in common, they switch jointly, and [the commission says] that therefore each is doing for the other a service that it cannot refuse to a third. We cannot believe that the rights to their own terminals reserved by the law are to be defeated by such a distinction."

Justices Pitney, Day, Brandeis and Clarke dissented. In the dissenting opinion, given "in view of the far-reaching effect of the decision upon the commercial interests of the country," Mr. Justice Pitney said in part: "In my opinion the present case is

controlled by our decisions in the former case between the same parties (L. & N. v. United States, 238 U. S. 1, 18, 19) and the earlier case of Pennsylvania v. United States 236 U. S. 351, 366. In these cases many of the same arguments that are here advanced were considered and overruled by the courts."—Louisville & Nashville v. United States (decided December 4, 1916).

Damages for Suffering Immediately Preceding Death

In the William B. Ward case damages were given by the Supreme Court of Minnesota for the injuries suffered by him prior to death as well as for pecuniary loss, the evidence tending to show that, after being run over by one or more cars, although wholly unconscious, the deceased continued to breathe for perhaps ten minutes. The Supreme Court of the United States has reversed this judgment for the following reason: "In St. Louis & Iron Mountain v. Craft, 237 U. S. 648, 655, 658 (June 1, 1915), we held that under the employers' liability act, as amended in 1910, the administrator of a fatally injured employee might recover the beneficiary's pecuniary loss, and also for pain and suffering endured by deceased between the moment of injury and final dissolution. We were careful, however, to say—'But to avoid any misapprehension it is well to observe that the case is close to the border line, for such pain and suffering as are substantially contemporaneous with death or mere incidents to it, as also the short periods of insensibility which sometimes intervene between fatal injuries and death, afford no basis for a separate estimation or award of damages under statutes like that which is controlling here.' And, referring to the two separate grounds of controversy—'Although originating in the same wrongful act or neglect, the two claims are quite distinct, no part of either being embraced in the other. One is for the wrong to the injured person, and is confined to his personal loss and suffering before he died, while the other is for the wrong to the beneficiaries, and is confined to their pecuniary loss through his death. One begins where the other ends, and a recovery upon both in the same action is not a double recovery for a single wrong, but a single recovery for a double wrong.' The present record presents the very circumstances which we declared afforded no basis for an estimation or award of damages in addition to the beneficiary's pecuniary loss."—Great Northern v. Capital Trust Co. (decided December 4, 1916).

Limitation of Liability for Passenger's Baggage

In an action for the value of lost baggage it appeared that the plaintiff purchased in New York a first class ticket to Kansas City, purporting to be subject to the liability limitation of \$100 for baggage for a full fare ticket unless value was declared; and this was repeated on the receipt given to the passenger when the trunk was checked. The railroad admitted liability for \$100. A jury was waived. The trial court held that no agreement limiting liability resulted from acceptance and use of the ticket and check, or from the existence of the published tariffs; plaintiff would be entitled to recover the reasonable value of her trunk and contents, unless she expressly assented to the provisions of said tariffs limiting liability. A judgment for \$1,771.52 was affirmed by the Kansas City Court of Appeals. This has now been reversed by the Supreme Court of the United States for the following reasons: "The transactions in question related to interstate commerce; consequent rights and liabilities depend upon acts of Congress, agreement between the parties, and common law principles accepted and enforced in federal courts. And the carrier is entitled to the presumption that its business is being conducted lawfully. In the circumstances disclosed, acceptance and use of the ticket sufficed to establish an agreement *prima facie* valid, which limited the carrier's liability. Mere failure by the passenger to read matter plainly placed before her could not overcome the presumption of assent. In order to determine the liability assumed for baggage it was proper to consider applicable tariffs on file with the Interstate Commerce Commission; and the carrier had a federal right not only to a fair opportunity to put these in evidence, but also that when before the court they should be given due consideration. After their admission in evidence by the trial court the tariffs could not be disregarded arbitrarily without denying the railroad's federal right; and we think they were so treated by the court of appeals."—N. Y. C. v. Beaham (decided December 4, 1916).

Railway Officers

Executive, Financial, Legal and Accounting

George C. Gahan has been appointed assistant general auditor of the Canadian Pacific, with office at Montreal, Que.

J. B. Webb has been appointed assistant freight claim agent of the St. Louis-San Francisco, Texas Lines, at Ft. Worth, Tex.

R. E. Kimbell, assistant to the first vice-president of the St. Louis-Southwestern, with office at St. Louis, Mo., has been appointed valuation accountant, with same headquarters.

E. Alexander, assistant secretary of the Canadian Pacific at Montreal, Que., has been appointed secretary and assistant to president, succeeding W. R. Baker, who at his own request has been relieved from his duties and placed on the retired list.

Clarence W. Huntington, who has been elected chairman of the board of the Virginian Railway, with headquarters at New York, as has been announced in these columns, was born on

May 31, 1857, at Newark, N. J., and was educated in the public schools, the Newark Academy, and Dorchester High School, Boston. He began railway work in September, 1876, as a freight brakeman on the Chicago, Rock Island & Pacific, and for 16 years held various positions on the same road. He was then for one year assistant superintendent of the Des Moines Northern & Western, now a part of the Chicago, Milwaukee & St. Paul, and later for one year was superintendent of the same road.

From November, 1894, to May 12, 1902, he was general superintendent of the Iowa Central, and then went to the Central of New Jersey as general superintendent, with headquarters at New York. In February, 1914, he was elected vice-president and general manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., from which position he resigned to become chairman of the board of the Virginian Railway and president of the Richmond Light & Railroad Company, with headquarters at New York.

James Russell, whose appointment as vice-president and general manager of the Minneapolis & St. Louis, with headquarters at Minneapolis, Minn., has been announced in these columns, was born in February, 1865. He began railway work with the Grand Trunk in 1879, and was employed as agent and operator until 1882. The following year he worked as telegraph operator for the Chicago, St. Paul, Minneapolis & Omaha, the Kansas Pacific and the Atchison, Topeka & Santa Fe, and from 1883 to 1887 was telegraph operator and train despatcher on the Canadian Southern and the Michigan Central. He was then successively train despatcher, chief despatcher and superintendent on the St. Paul, Minneapolis & Manitoba and the Great Northern until 1903, when he was appointed superintendent on the Missouri Pacific. Four years later he became a superintendent of the Chicago, Burlington & Quincy, and from 1909 to January 1, 1914, he was general superintendent of the Spokane, Portland & Seattle. He was then appointed general superintendent of the Great Northern, which position he held until April 1, 1914, when he went to the Denver & Rio Grande as assistant to the vice-president, with headquarters at Denver, Colo. Later on he became general manager, the position he resigned to become vice president and general manager of the Minneapolis & St. Louis.



C. W. Huntington

Operating

N. E. Bailey, general superintendent of the United Verde & Pacific Railway and the Verde Tunnel & Smelter Railroad at Jerome, Ariz., has resigned to engage in other business.

S. V. Rowland, trainmaster of the Chicago Great Western, with headquarters at St. Paul, Minn., has been appointed assistant superintendent, with office at Red Wing, Minn., succeeding J. M. Baths, resigned. George G. Rutherford has been appointed trainsmaster at St. Paul, succeeding S. V. Rowland.

M. L. Masteller, general manager of the Jucaro & Moron Railroad at Ciego de Avilo, Cuba, has been appointed head of the freight traffic and transportation departments of the United Railways of Havana, the Havana Central Railroad, the Western Railway of Havana, and the Havana Terminal Company, with headquarters at Havana, Cuba.

George James Fox, whose appointment as superintendent of the Canadian Pacific, with headquarters at Schreiber, Ont., has already been announced in these columns, was born on September 24, 1883, at Montreal, Que., and was educated in the public schools. He began railway work in June, 1898, with the Canadian Pacific, and has been in the continuous service of this road ever since. He served consecutively as a clerk in the car service department at Montreal, stenographer, secretary to general superintendent, assistant chief clerk, and as chief clerk at Montreal, Que. He was then assistant chief clerk in the general manager's office, and later was clerk in the vice-president and general manager's office, at Winnipeg, Man. In September, 1912, he was appointed night yardmaster, and shortly afterward became day yardmaster at Saskatoon, Sask. On November 1, 1913, he was appointed general yardmaster at Swift Current, Sask., and in July, 1915, was transferred in the same capacity to Fort William, Ont. In April, 1916, he became trainmaster at Winnipeg, Man., which position he held at the time of his recent appointment as superintendent of the Schreiber division of the same road, as above noted.

Edmund Crawford, whose appointment as superintendent of car service of the Canadian Northern, on lines east of Port Arthur, Ont., with headquarters at Toronto, has already been announced in these columns, was born on March 20, 1884, at Fernhill, Ont. He was educated in the public and high schools at Strathroy, Ont., and began railway work on October 7, 1901, as a clerk in the office of the superintendent of transportation of the Pere Marquette, at Detroit, Mich. He remained in that position until December, 1905, and the following April became clerk to the freight agent of the Pennsylvania Railroad, at Washington, D. C. From December, 1907, to April, 1912, he was chief yard clerk on the



E. Crawford

Grand Trunk at London, Ont., and from June to September, 1912, was chief clerk to the general foreman at the same place. In June, 1913, he was appointed car agent of the Canadian Pacific at Vancouver, B. C., then from September, 1915, to May, 1916, was traveling car agent of the Canadian Northern, Eastern lines. On June 1, 1916, he was appointed chief clerk to the superintendent of transportation on the Eastern lines of the Canadian Northern, which position he held at the time of his recent appointment as superintendent of car service of the same road, as above noted.

Traffic

F. P. Tinker has been appointed district freight agent of the Canadian Pacific, with office at Ottawa, Ont., vice G. P. Ruickbie, transferred.

F. S. Brooks, general live stock agent of the Atchison, Topeka & Santa Fe, has resigned to become general agent for Swift & Co., Chicago, Ill.

Everett D. Davis, soliciting freight agent of the Buffalo, Rochester & Pittsburgh, has been appointed division freight agent, with headquarters at Rochester, N. Y.

H. C. McFadden, traffic manager of the Georgia & Florida at Augusta, Ga., has been appointed general eastern agent of the Norfolk Southern, with office at New York City.

W. F. Richardson, commercial freight agent of the Baltimore & Ohio at Boston, Mass., has been appointed assistant general freight agent, with headquarters at Philadelphia, Pa.

George Stephen, assistant freight traffic manager of the Canadian Northern, and the Duluth, Winnipeg & Pacific, with headquarters at Winnipeg, Man., has been appointed freight traffic manager for lines west of and including Port Arthur, Ont., and Duluth, Minn., with office at Winnipeg, Man.

William Crosswell Ragin, whose appointment as assistant general freight agent of the Atlantic Coast Line, with headquarters at Savannah, Ga., has already been announced in these columns, was born on August 10, 1880, at Summerton, Clarendon county, S. C., and graduated in 1901 from Emory College, Oxford, Ga. He began railway work in August, 1898, with the Atlantic Coast Line as stenographer and clerk at Wilmington, N. C., and in 1902 was appointed soliciting agent at Macon, Ga. In 1905 he became traveling freight and passenger agent at Goldsboro, N. C.; then from September, 1908, for one year was special traffic agent at Savannah, Ga. From September, 1909, to September, 1912, he was commercial agent at Ocala, Fla.; then to 1914 served as commercial agent at Albany, Ga. In March, 1914, he was appointed division freight agent, at Montgomery, Ala., remaining in that position until his recent appointment as assistant general freight agent, at Savannah, Ga. Mr. Ragin's entire railway service has been with the Atlantic Coast Line.

Daniel S. Roberts, the announcement of whose appointment as assistant general freight agent of the Kansas City Southern, with office at Kansas City, Mo., has been made in these columns,

was born on April 29, 1883, at Westminster, Md. In 1902 he began railway work with the St. Louis & San Francisco at Oklahoma City, Okla., in a clerical capacity, but shortly afterward left this position to go into other work. Mr. Roberts returned to railway work on the St. Louis & San Francisco, first as yard clerk and then as bill clerk at Oklahoma City, Okla. In 1905 he was appointed assistant cashier, and was soon promoted to cashier of this company. From 1906 to 1908 he was traveling freight agent of the Kansas



D. S. Roberts

City Southern, with headquarters at Chicago, Ill., and from 1908 to 1911, commercial agent with the same office. In 1911 he was appointed general agent, with office at Pittsburgh, Pa., which position he held at the time of his appointment as assistant general freight agent, in charge of outside solicitation and industrial development.

Engineering and Rolling Stock

E. L. Cannon, chief clerk to the chief engineer of the Seaboard Air Line, has been appointed office engineer at Norfolk, Va.

C. R. Harding, chief draftsman to consulting engineer of the Southern Pacific at New York, has been appointed assistant to consulting engineer, with office at New York.

J. H. Schuch has been appointed chief engineer of the Butte, Anaconda & Pacific, succeeding Charles A. Lemmon, who re-

signed some time ago to enter the service of the Anaconda Copper Company, Anaconda, Mont.

Samuel T. Armstrong, division master mechanic of the International & Great Northern, has been appointed superintendent of motive power, succeeding F. W. Taylor, resigned to accept service with another company. Effective January 1.

E. L. Crugar, assistant engineer of the Illinois Central, with office at Chicago, Ill., has been appointed district engineer, with office at New Orleans, La., succeeding C. E. Weaver, appointed engineer maintenance of way of the Central of Georgia.

George McCormick, whose appointment as general superintendent of motive power of the Southern Pacific, lines west of El Paso, Tex., has been announced in these columns, was born on July 15, 1872, at Columbus, Tex. He was graduated from the Agricultural and Mechanical College at Bryan, Tex., with the degree of mechanical engineer in 1891. He began railway work in 1891, as an apprentice in the shops of the Galveston, Harrisburg & San Antonio, at Houston, Tex. In a short time he was transferred to San Antonio, Tex., as a draftsman, returning to Houston in 1895 as chief draftsman. In 1900 he was appointed mechanical engineer, in which position he remained until December, 1911, when he went to El Paso, Tex., as assistant superintendent of the El Paso division. He held this latter connection until his appointment in February, 1913, as assistant general manager (mechanical) of all the Southern Pacific, Texas lines, with headquarters at Houston, Tex. His new headquarters will be at San Francisco, Cal., and his jurisdiction will include all the Southern Pacific lines in the states of New Mexico, Arizona, California, Oregon and Nevada.

Purchasing

A. H. Mulcahey has been appointed assistant purchasing agent of the Grand Trunk Pacific, with office at Winnipeg, Man.

C. B. Porter, chief clerk to receiver of the International & Great Northern, has been appointed purchasing agent and general storekeeper, with office at Houston, Tex., vice E. O. Griffin, resigned to accept service with another company.

E. O. Griffin, purchasing agent and general storekeeper of the International & Great Northern, with office at Houston, Tex., has resigned, effective December 15, having been appointed general purchasing agent for the St. Louis Southwestern, with headquarters at St. Louis, Mo.

OBITUARY

J. T. Jones, president of the Gulf & Ship Island, with headquarters at Gulfport, Miss., died on December 6 at Buffalo, N. Y.

Robert Kerr, formerly passenger traffic manager of the Canadian Pacific at Montreal, Quebec, died on December 9 at Toronto, Ont. He was born in August, 1845, at Toronto and began railway work in 1866, serving consecutively as warehouse clerk and in various positions with the Northern Railway of Canada until 1879, when he was appointed through freight agent of the same road. He subsequently served as general freight and passenger agent of the Northern and Northwestern railways. From June, 1884, to January, 1896, he was general freight and passenger agent of the Western and Pacific divisions of the Canadian Pacific at Winnipeg, Man., and then was appointed traffic manager of the lines west of Lake Superior. In June, 1899, he was appointed passenger traffic manager of all Canadian Pacific lines, remaining in that position until October 1, 1910, when he retired from active service.



G. McCormick

Equipment and Supplies

LOCOMOTIVES

THE CENTRAL OF NEW JERSEY is in the market for a number of ten-wheel locomotives.

THE NORFOLK & PORTSMOUTH BELT LINE is reported in the market for 2 switching locomotives.

THE TEXAS, OKLAHOMA & EASTERN has ordered one Prairie type locomotive from the Baldwin Locomotive Works.

THE BALTIMORE & OHIO has ordered 30 Mallet and 10 Pacific type locomotives from the Baldwin Locomotive Works.

THE J. W. PAXSON COMPANY, Philadelphia, Pa., has ordered 2 four-wheel locomotives from the Baldwin Locomotive Works.

THE CANADIAN GOVERNMENT RAILWAYS have recently ordered 10 Santa Fe type locomotives from the Montreal Locomotive Works.

THE WHITAKER-GLESSNER COMPANY, Portsmouth, Ohio, has ordered one six-wheel switching locomotive from the Baldwin Locomotive Works.

THE GREAT NORTHERN, reported in last week's issue as being about to issue inquiries for 40 locomotives, has ordered 50 Mikado locomotives from the Baldwin Locomotive Works.

THE NEW YORK, NEW HAVEN & HARTFORD, reported in the *Railway Age Gazette* of September 1 as asking for prices on 28 Santa Fe type locomotives, has increased its inquiries to 40 Santa Fe type engines.

THE DULUTH, MISSABE & NORTHERN, reported in last week's issue as having placed an order for 2 Mallet type locomotives, ordered these locomotives (2-8-8-2 type) from the Baldwin Locomotive Works, and has also ordered 4 eight-wheel switching locomotives from the same company.

THE ERIE was reported in last week's issue as having ordered 10 Pacific type locomotives from the American Locomotive Company. These locomotives will have 25 by 28 in. cylinders, 69-in. driving wheels, a total weight in working order of 287,000 lb., and will be equipped with superheaters.

THE RUSSIAN GOVERNMENT has placed additional orders for locomotives, bringing the total now ordered to 331 engines, divided as follows: American Locomotive Company, 140; Baldwin Locomotive Works, 150, and Canadian Locomotive Company, 41. It is understood that a total of 350 locomotives will be placed at this time, and probably more later.

THE MAINE CENTRAL has ordered 2 superheater six-wheel switching locomotives from the American Locomotive Company. These engines will have 21 by 28 in. cylinders, 51-in. driving wheels, and a total weight in working order of 166,000 lb. It is understood that the Maine Central may also place orders for some more locomotives.

FREIGHT CARS

THE LONG ISLAND is reported in the market for 100 box and 100 gondola cars.

THE PIEDMONT & NORTHERN is in the market for 100 50-ton gondola cars.

THE WHEELING & LAKE ERIE has issued inquiries for 500 70-ton gondola and 500 70-ton hopper cars.

THE SAN ANTONIO & ARANSAS PASS is rebuilding about 350 freight cars in its own shops at Yoakum, Tex.

THE MINNEAPOLIS & ST. LOUIS has ordered 300 flat bottom and 200 drop bottom gondola cars from the Haskell & Barker Car Company.

THE BALTIMORE & OHIO is inquiring for 1,000 55-ton steel underframe composite hopper cars, and will probably place orders for 2,000 cars.

THE CLARK CAR COMPANY, Pittsburgh, Pa., has placed an order with the Cambria Steel Company to build 500 Clark dump cars.

THE NEW YORK, CHICAGO & ST. LOUIS, reported in the *Railway Age Gazette* of November 24 as inquiring for 750 gondola and 500 hopper cars, has ordered the gondola cars from the Standard Steel Car Company, and is understood to have dropped the inquiry for the hopper cars.

PASSENGER CARS

THE BOSTON ELEVATED has issued inquiries for 35 subway cars.

THE INTERBOROUGH RAPID TRANSIT is contemplating the purchase of a large number of subway cars.

THE CENTRAL OF NEW JERSEY has issued inquiries for 25 coaches and 10 passenger and baggage cars and is understood to be contemplating the purchase of 15 baggage cars.

THE BOSTON & MAINE, reported in the *Railway Age Gazette* of November 17 as being in the market for 6 postal cars, has ordered these cars from the Osgood-Bradley Car Company.

THE NEW YORK CENTRAL'S recent order for 25 baggage cars given to the Pullman Company has been divided as follows: Michigan Central, 10, and the Cleveland, Cincinnati, Chicago & St. Louis, 15.

IRON AND STEEL

THE MISSOURI, KANSAS & TEXAS has ordered 47,000 tons of rails for 1918 delivery.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered 50 miles of 85-lb. open hearth rail from the Illinois Steel Company for 1918 delivery.

ARMOUR & Co. has placed orders for five oil storage tanks at Fort Worth, Tex., 784 tons, and for two 37,500 bbl. capacity standard steel oil storage tanks at Texas City, Tex., 364 tons.

MACHINERY AND TOOLS

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA has issued inquiries for 50 machine tools for car shops.

THE CHICAGO, BURLINGTON & QUINCY will receive bids until December 24 for 75 machine tools for its new West Burlington shops.

SIGNALING

NORFOLK & WESTERN.—This company proposes, during the coming year, to install automatic block signals on 120 miles of line.

THE ATLANTA & WEST POINT, during the past year, has completed the installation of automatic block signals on its line from East Point, Ga., to Newnan, 33 miles; and expects to complete, in 1917, 32 miles more, Newnan to Lagrange.

THE DETROIT UNITED (electric) lines have under construction three interlocking plants at crossings with the Grand Trunk; and two others are to be installed during the coming year; one of 52 levers at the crossing of the Michigan Central and the Grand Trunk, and one of 24 levers at the crossing of the Pere Marquette.

THE CHICAGO & NORTH WESTERN plans in 1917 to equip 177 miles of road, single track, with automatic block signals; Milwaukee, Wis., to Manitowoc, 75 miles, and Clyman Junction, Wis., to Wyeville, 102 miles. In connection with this work, all passing tracks will be lengthened so as to hold 100 cars each; and this will mean 20 miles of new track.

THE ILLINOIS CENTRAL has completed 170 miles of automatic block signaling during the past year. It is to be found on the line from Gilman, Ill., to Mattoon, 90 miles; and 80 miles between Paducah, Ky., and Eddyville, and between Dugan and Cecilia. On the Mississippi division, in the states of Mississippi and Tennessee, automatic block signals are now in course of construction on 183 miles of line, the work to be completed about March 1 next; and on the Louisiana division, in the states of Mississippi and Louisiana, 191 miles, now about half completed, will be put in operation March 1 next.

Supply Trade News

Charles B. Moore has resigned as vice-president and director of the Boss Nut Company, Chicago, Ill.

Edward L. Pollock, People's Gas building, Chicago, has been appointed western representative of the Wilson Welder & Metals Company, New York.

A. J. Boyle, formerly with the Pittsburgh Screw & Bolt Co., Pittsburgh, Pa., has been appointed general manager of the Boss Nut Company, Chicago, Ill.

Holden & White, dealers in electric railway specialties, Chicago, Ill., have been appointed general sales agents by the Garland Ventilator Company, for the sale of Garland ventilators in the steam railway field, as well as in the electric railway field.

W. V. D. Wright, formerly sales agent of the Chicago district for the Railway Steel Spring Company, has been elected vice-president of the Edgewater Steel Company, which is building a plant at Pittsburgh, Pa., for the manufacture of locomotive tires and rolled steel wheels.

F. A. Purdy, Canadian representative of the Chicago Car Heating Company at 61 Dalhousie street, Montreal, has also been appointed direct representative of the U. S. Light & Heat Corporation to the railroads of Canada, and will henceforth represent both companies.

Samuel A. Benner, who has represented the American Steel Export Company in London and Petrograd, and returned to the United States a few days ago, has been made general manager of sales of the company, with headquarters in the Woolworth building, New York.

Norman C. Naylor has been appointed sales agent of the Chicago district, in charge of the Chicago office, for the Railway Steel Spring Company of New York.

Mr. Naylor has been in the employ of the Railway Steel Spring Company since 1902. He was born in Rochester, N. Y., June 3, 1881, and entered the employ of McKee-Fuller & Co. September 8, 1895. In June, 1896, he left this company to attend school in Colorado. He entered the employ of the Steel Tired Wheel Company, July 5, 1898, going to the Railway Steel Spring Company in 1902, when the Steel Tired Wheel Company was merged with the latter. He has been

employed in the Railway Steel Spring Company continuously since that time.

N. B. Ford, who for 10 years traveled for the Corbin Screw Corporation of New Britain, Conn., from its Chicago office, having his headquarters in Kansas City, and who left some two years ago to become connected with the Ford Chain Block & Manufacturing Company of Philadelphia, has re-entered the employ of the Corbin Screw Corporation as salesman, with headquarters in New Britain, and covering the territory formally traveled by A. H. Harrop.

The Factory Appliance Company, 3814 Prospect avenue, Cleveland, Ohio, advises that Jacques Vieyra, 24 Rue de Lubeck, Paris, France, would like to receive from companies who may be interested in French export trade, catalogues on railway supplies and machinery, with a view to the taking up of the importation and sale of such products in France and her colonies. Mr. Vieyra wishes to consider exclusive representations only.



N. C. Naylor

The Factory Appliance Company will be pleased to supply further details regarding Mr. Vieyra and his facilities.

Frederick C. Fisher, president of the Ferro Construction Company, Chicago, Ill., died at his home in that city on Tuesday, December 5. He was born at Lake Linden, Mich., on May 24, 1871. After graduating from the engineering college of the University of Michigan, he was employed by the Detroit Bridge Company as a draftsman, and a short time later by the American Bridge Works, Chicago, Ill. In 1899, he went with the Kelly-Atkinson Construction Company, and while in their employ had charge of the erection of the Great Northern's large grain elevator at Superior, Wis., a railroad bridge crossing the Mississippi river at Thebes, Ill., and the Fort Dodge, Des Moines & Southern bridge at Fort Dodge, Ia. On March 15, 1907, he was elected president of the Ferro Construction Company, Chicago. From that time up to his death, as noted above, he was in charge of the construction of many large structures, the most recent including the 600-ft. steel arch span for the new Detroit-Superior viaduct and the new Clark avenue viaduct, both in Cleveland, Ohio.

W. J. Leighty, the announcement of whose resignation as mechanical engineer of the St. Louis-San Francisco, with office at Springfield, Mo., to become chief engineer for the Oxweld Railroad Service Company, Chicago, Ill., has

been made in these columns, was born at Tonganoxie, Kan., on October 19, 1878. Upon leaving the University of Kansas, where he spent four years, he entered railway service in August, 1904, as a machinist in the Atchison, Topeka & Santa Fe shops at Topeka, Kan. In April, 1905, he was transferred to the efficiency department of the same road, in which capacity he remained until the following September, when he re-entered the University of Kansas. In June,

1906, he graduated from the mechanical and electrical engineering departments of that institution, following which he returned to the efficiency department of the Santa Fe at Topeka, Kan. On June 1, 1907, he left the Santa Fe to enter the service of the St. Louis & San Francisco in the office of the general superintendent of motive power, devoting his time to the standardization of mechanical equipment. On December 21, 1907, he became one of the motive power assistants in the experimental and betterment departments on the Atchison, Topeka & Santa Fe, with headquarters at Topeka, Kan., being transferred to the position of assistant to the engineer of tests on August 1, 1912. In October, 1913, he was appointed mechanical engineer of the St. Louis & San Francisco, with headquarters at Springfield, Mo., from which position he resigned to enter the service of the Oxweld Railroad Service Company, as above noted.

A Correction

The statement made in the *Railway Age Gazette* of December 8 to the effect that Franklin Morey, who died recently, was president of the Commonwealth Steel Company, St. Louis, Mo., was in error. Mr. Morey was the father-in-law of Clarence H. Howard, who is the president of this company.

Union Switch & Signal and Westinghouse Air Brake Companies to Merge

At separate meetings of the boards of directors of the two companies last Friday, it was unanimously voted to merge the Westinghouse Air Brake Company and the Union Switch & Signal Company. The matter will be submitted to stockholders of both companies for approval within the next two weeks. It

is planned to increase the capital of the Air Brake Company from \$20,000,000 to \$30,000,000, and make an exchange of stock on the basis of four shares of the Air Brake Company for five shares of Union Switch preferred and two shares of Air Brake for three shares of Union Switch common.

The object of the merger is to reduce overhead expenses, as both companies are controlled by practically the same interests, and are now engaged in similar kinds of business. What changes in the physical status of the plants will result from the merger has not been decided upon.

Steel Corporation's Unfilled Orders 11,058,542 Tons

The United States Steel Corporation reported unfilled orders on hand November 30 as totaling 11,058,542 tons. This is again a new record, and the increase of 1,043,282 tons over the October 31 figures of 10,015,260 tons represents the largest gain yet made during a single month. At the present rate of production the total of unfilled orders will be sufficient to maintain full operations for at least seven months. Unfilled orders on September 30 totaled 9,522,584 tons; on August 31, 9,660,357 tons; on July 31, 9,593,592 tons, and on November 30, 1915, 7,189,489 tons.

More About Draft Gear Patent Decisions

In last week's issue, page 1071, announcement was made of the decision rendered by Judge John R. Hazel, of the United States District Court for the Western district of New York, holding that the T. H. Symington Company had infringed certain patents of William H. Miner and the O'Connor patent in the manufacture of draft gears. In order that this statement may not be misunderstood, it should have been added that the decision rendered involved the method of manufacture of a tandem draft gear cheek plate, covered by patent No. 1,097,740, granted to Thomas H. Symington, and in no way involved the patents covering the Farlow draft gear, manufactured by the T. H. Symington Company.

The United States Circuit Court of Appeals for the Seventh circuit, sitting in Chicago, has just rendered a decision reversing the decision by District Judge Landis, and holds that C. J. Nash and the Universal Draft Gear Attachment Company do not infringe patents Nos. 758,677, of May 3, 1904; 829,728, of August 28, 1906, and 858,746, of July 2, 1907, all relating to tandem draft rigging and owned by W. H. Miner.

It should be noted that the O'Connor patent, No. 829,728, which was cited by Judge Hazel against the Symington company, was also cited in the case against C. J. Nash and the Universal Draft Gear Attachment Company.

American International Corporation

The annual report of the American International Corporation issued under date of December 6 contains some interesting details concerning the work of this company. The corporation was organized November 23, 1915, with a capital of \$50,000,000, of which one-half is now paid in. During the year ending December 1, 1916, the estimated surplus earned was \$2,231,495, exclusive of the appreciation of stocks and bonds. The directors recently declared a dividend of 75 cents a share.

The American International Corporation, as its name indicates, and as is well known, was organized to direct American capital, technical skill and administrative experience into the international field. It has as chairman of the board, Frank A. Vanderlip, of the National City bank; as president, Charles A. Stone, of Stone & Webster, and its board of directors has been chosen from the leading men in this country in industry, transportation, manufacture and finance. Its working organization has its headquarters at 120 Broadway, New York.

During its first year the corporation has become interested in the following: Pacific Mail Steamship Company, the Allied Machinery Company of America, the Uruguayan contract, the Latin-American Corporation, the Rosin & Turpentine Export Company, the International Mercantile Marine Company, the United Fruit Company, the American International Terminals Corporation, a ship-building company, and the tea business; and it has extensive interests in Russia and China.

The last two are of special interest to the railway field. Concerning Russia the report says that on August 31, 1916, Frederick Rollins, an engineer and head of the Holbrook, Cabot &



W. J. Leighty

Rollins Corporation, was chosen vice-president of the corporation to represent its interests in Petrograd. The report adds that Mr. Holbrook, with the help of other experts has made arrangements to investigate certain railroads and steel and coal enterprises, etc., and that, "We are now filling orders for the Russian government for a large amount of steel rail and other railway equipment."

Readers of the *Railway Age Gazette* are already familiar with the Siems-Carey Railway & Canal Company, which has been organized to build and finance railways and canals in China. (See *Railway Age Gazette* of October 13, page 660.) Mr. Carey, of the Siems-Carey company, and a group of engineers and experts have been in China since August. The corporation has advanced \$500,000 to be expended by the Chinese government for surveys and investigations for the proposed lines. Engineers are at present on the ground studying the situation.

TRADE PUBLICATIONS

LOCOMOTIVE GRATE SHAKER.—Bulletin No. 700, recently issued by the Franklin Railway Supply Company, New York, gives information relative to the advantages and operation of the Franklin steam grate shaker.

GEARS.—Facts About Gears is the title of a 40-page booklet recently issued by the Van Dorn & Dutton Company, Cleveland, Ohio. The booklet is termed a reference book for gear buyers. It is divided into 21 sections giving such information as: Gearing terms; how to order gears of all kinds, spur gear specifications, bevel and mitre gear specifications, worms and worm gears, sprocket specifications, Lewis' rule for strength of gear teeth, diametral pitch-formulae, diametral pitch-table, circular pitch-formulae, circular pitch-table, decimal equivalents, metric pitch module, standard keyways, comparative size of gear teeth, etc.

ASBESTOS BUILDING MATERIALS.—The H. W. Johns-Manville Company, New York, has issued two 32-page pamphlets covering transite asbestos shingles and corrugated asbestos roofing respectively. Both of the pamphlets are illustrated with views of buildings of all kinds in various parts of this country in which these materials have been used. Several pages are also devoted to data concerning the size, shape, weight, etc., to facilitate estimating, particularly the pamphlet on corrugated roofing, which contains a number of sketches of construction details for the use of this material on steel frame shop buildings.

TIN PLATE. The American Sheet & Tin Plate Company, Pittsburgh, Pa., has issued an attractive 28-page booklet, No. 120, entitled "Black Sheets and Special Sheets." The booklet describes the various kinds of tin plate made by the company and contains a number of tables, among them being one of weights of American painted roofing and siding, a bundling table of black sheets, etc. Another of the interesting features of the booklet is a diagram of the manufacture of steel showing the processes from the ore, limestone and coal to fabricated structures, rails, frogs and switches, wire and nails, tin plate, etc.

THE PENNSYLVANIA RAILROAD SYSTEM.—The Pennsylvania Railroad System has recently issued, in booklet form, an historical and descriptive treatise covering the territory traversed by its lines. The booklet gives a brief description of the cities, and of the more important towns on the Pennsylvania Railroad, east and west of Pittsburgh, with the business advantages and achievements of each. One of the principal objects in its publication is to preserve the most interesting and picturesque incidents connected with the settlement and subsequent development of this region. Another purpose is to set forth the present character of the various portions of the territory with reference to industry, mining, agriculture and commerce. Many of the historical incidents recorded are little known, and were obtained with difficulty from obscure sources to rescue them from oblivion. They relate chiefly to events in the discovery period of American history, to happenings during Colonial days, the Revolution, the War of 1812, the wars with Mexico and the Indians, and the Civil war, with some or all of which practically every portion of the territory traversed by the Pennsylvania Railroad System was in one way or another associated. The book is profusely illustrated, and is accompanied by a large annotated map.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—Within a few days this company will award contracts for grading, bridge work, track laying, fencing and buildings required for the North Texas & Santa Fe extension from Shattuck, Okla., southwesterly to a point near Hansford county, Tex. The company will furnish the track and bridge material. There will be 82 miles of main line, 12 miles of sidings, 2,500,000 cu. yd. of excavation, 2,800 lineal ft. of trestle bridging and 400 ft. of steel bridging. Four frame combination depots containing agents' cottage, section and bunk houses and water stations will be required. One three-stall engine house also will be constructed.

This company is calling for bids for the Brownfield extension of the South Plains & Santa Fe from Lubbock, Tex., to a point about 24 miles southwest of Brownfield, Tex. The company will furnish the track and bridge material only. All other work is to be let by contract. There will be 64 miles of main line, 8 miles of siding, 1,000,000 cu. yd. of excavation, 650 lineal ft. of bridging, three small frame combination depot buildings containing agent's cottage, section and bunk houses and a water station, and a three-stall engine house.

CHESAPEAKE & OHIO.—Construction work is now under way on lines as follows: From Seth, W. Va., to Jarrold Valley, 13.3 miles, contract let to the Boxley Brothers Company, Orange, Va.; from Little Marsh Fork to Hazy Creek in West Virginia, 6.5 miles, on which the Rowland Land Company is handling the grading work; on the Pond Fork Railway from Madison, W. Va., to mouth of West Fork, 11.6 miles, contract let to Board & Duffield, Charleston, W. Va.; from Man, W. Va., to Gilbert Creek, 12.8 miles, contract let to Ballard Herring & Severs, Yancey Mills, Va., and from Cow Creek, W. Va., to Conley Creek, 3 miles, on which the grading work is being carried out by Cole & Crane. In addition the following new work has been authorized, but construction has not yet been started: On the Big Elk Run of Coal River in W. Va., 3.5 miles; extension up Pond Fork on Pond Fork Railway in W. Va., 4 miles, and extension up West Fork, 4 miles; extension of Beech Creek up Beech Creek in W. Va., 2 miles; extension of Logan & Southern up Pine Creek, in W. Va., 2.5 miles; up Little Creek, 1 mile, and up Island Creek from Conley Creek Branch, 1.5 miles. This company has also projected second track work to be carried out in the states of Virginia and West Virginia aggregating 18.21 miles.

CHICAGO, BURLINGTON & QUINCY.—This company has applied to the Missouri Public Service Commission for permission to build a line from Monroe City, Mo., to Moberly, 40 miles, and from Mexico to Moberly, 36 miles. The Burlington is also negotiating with the Santa Fe to induce it to build a line from Carrollton to Moberly, 60 miles, thus giving both roads a low grade line from Kansas City to St. Louis, and the Burlington a low grade line from Kansas City to Chicago.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—Work is now under way on a change of line on the Hannibal branch, Wis., which will shorten the distance 1.6 miles. This work is necessary by reason of a dam being built by the Wisconsin-Minnesota Power Company at Chippewa, Wis., which will cause the original track to be under water.

GRAND TRUNK PACIFIC.—Work is now under way by the Grand Trunk Pacific Branch Lines building a 24-mile extension of the Prince Albert branch in Saskatchewan from mile 87.4 to mile 111.66. The grade has already been resurfaced for track laying, and track will be laid early in 1917.

MIDLAND PENNSYLVANIA.—Surveys are now being made to build an extension from Gratz, Pa., to Gordon, 25 miles. Walter S. Aldrich, Audubon, N. J., is the contractor.

MORGAN & FENTRESS.—Work is now under way building an extension from Obed Junction, Tenn., towards Jamestown, 10 miles. F. H. Enright, Harriman, Tenn., has the contract. This company now operates an 18-mile line from Nemo to Obed Junction, which is eventually to be extended west to a point in Fentress county, 56 miles.

MURPHYSBORO & SOUTHERN ILLINOIS (ELECTRIC).—This company has let contracts, and work is in progress on a new line from Murphysboro, Ill., to Carbondale, a distance of 7 miles. There will be about 100,000 cu. yd. of excavation, one 52-ft. steel bridge and several pile trestles running from 50 ft. to 600 ft. in length. Rolling stock and other equipment will be purchased by R. G. Smith, chief engineer, Third National Bank building, St. Louis, Mo.

NORTH TEXAS & SANTA FE.—See Atchison, Topeka & Santa Fe.

POCATELLO TRACTION & INTERURBAN.—This company is being organized, and proposes to build a new line from Preston, Idaho, through Pocatello, Blackfoot, Idaho Falls, Shelley and St. Anthony, to Ashton, 172 miles. Richard Douglas, president, Pocatello, Idaho.

ST. PAUL SOUTHERN (ELECTRIC).—This company, operating between St. Paul, Minn., and Hastings, Minn., about 25 miles, is extending its line from Hastings to White Rock, 23 miles further. About 60 per cent of the grading work has been done. The average grading per mile is about 15,000 cu. yd., the grades average about 2 per cent, and the curves 10 deg. There will be two 160-ft. and six 80-ft. steel spans erected on piles. On the completion of this extension the company contemplates the construction of a line through White Rock, Dum-brota, Rochester, Chatfield, Preston and Harmony in Minn., down through Burr Oak, Ia., to Decorah, a total distance of 126 miles. H. A. Genung, chief engineer, St. Paul, Minn.

SAND SPRINGS.—This company, which operates partly by steam and partly by electricity a road from Sand Springs, Okla., to Tulsa, about nine miles, has let contracts for double tracking the line, and for the construction of a combination freight and passenger station at Tulsa. The station will cost \$25,000.

RAILWAY STRUCTURES

CHICAGO, ILL.—The Illinois Central has purchased 1,500 tons of structural steel from the American Bridge Company for the construction of a single leaf Strauss bascule bridge 260 ft. long over the south branch of the Chicago river on the St. Charles Air Line. About 3,000 cu. yd. of masonry will be placed, for which bids will be asked on or before March 1, 1917. The estimated cost of the entire project is \$350,000.

EUREKA, CAL.—The Northwestern Pacific intends shortly to erect over Eureka Slough, between Eureka and Arcata, a single-track swinging bridge with two openings, each 75 ft. in the clear on center line. The bridge is now being fabricated by the American Bridge Company under Harriman lines common standard specifications.

GALVESTON, TEX.—It has finally been decided to carry out the reconstruction of the damaged portion of the Galveston causeway, which was destroyed by a hurricane in August, 1915, in accordance with the plans as prepared by the Concrete-Steel Engineering Company, New York. This design provides for an arch structure consisting of 84 additional concrete arches.

INDIANAPOLIS, IND.—The Indianapolis Traction & Terminal, and the Terre Haute, Indianapolis & Eastern, have purchased the old Federal League baseball park, and intend to convert the property into a new freight depot, which will serve all the interurban lines entering the city. The proposed freight depot will cost about \$400,000. Robert I. Todd, president, Indianapolis Traction & Terminal, Indianapolis, Ind.

RICHMOND, VA.—The Atlantic Coast Line is building a reinforced concrete arch over Arch street at Richmond.

NEW LINE IN CENTRAL AMERICA.—The International Railways of Central America has projected a line to run southeasterly from Santa Maria to Santa Ana in Salvador. It is stated that when this and other lines in Central America, projected or under construction, are completed, a direct through route will be afforded between Vera Cruz, Mexico, and Panama and Colon, extending along the western portion of Central America through the five republics of Guatemala, Salvador, Honduras, Nicaragua and Costa Rica.

Railway Financial News

BOSTON & MAINE.—Judge Morton, in the course of the hearings on the question of making the temporary receivership of the Boston & Maine permanent, ruled that the validity of the outstanding \$27,000,000 notes, or the purposes for which the money from the sale of these notes was used, could not be attacked in the present proceedings.

CHICAGO, ROCK ISLAND & PACIFIC.—The Wall Street Journal says that unofficially it may be stated that an understanding has been reached between the reorganization committee and the committee representing the refunding 4 per cent bonds, by which the petition of the refunding committee for foreclosure of that mortgage will not be pressed. This means that the proposal for a new open mortgage under which bonds would be issued to be exchanged for the outstanding refunding 4 per cent bonds has been abandoned.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—Stockholders have voted to buy the Saline Valley and the Evansville, Mt. Carmel & Northern. The Saline Valley operates two miles of road, and the company was organized to build a line from Harrisburg, Saline county, Ill., to Marion, in Williamson county. All of its securities are owned by the Cleveland, Cincinnati, Chicago & St. Louis, and its road is leased to this company. The Evansville, Mt. Carmel & Northern runs from Mt. Carmel, Ill., to Evansville, Ind., 33 miles, and is now leased to the Cleveland, Cincinnati, Chicago & St. Louis.

EVANSVILLE, MT. CARMEL & NORTHERN.—See Cleveland, Cincinnati, Chicago & St. Louis.

GULF, MOBILE & NORTHERN.—It is understood that an agreement has been reached between the railroad commission of Mississippi and the New Orleans, Mobile & Chicago, which will permit the reorganization of this company, now in the hands of a receiver, under the name of the Gulf, Mobile & Northern.

MICHIGAN CENTRAL.—Stockholders are to be asked on February 7 to approve the placing of a refunding and improvement mortgage on all of the property of the company under which bonds can be issued not to exceed \$100,000,000. The Michigan Central debentures of 1909 will be secured by this mortgage on a parity with the bonds to be issued thereunder.

NEW ORLEANS, MOBILE & CHICAGO.—See Gulf, Mobile & Northern.

SALINE VALLEY.—See Cleveland, Cincinnati, Chicago & St. Louis.

RAILWAY IMPROVEMENT IN GUATEMALA.—One of the most important railway improvements in many years in Guatemala will be made effective January 1, 1917, when the International Railway of Central America will begin freight and passenger service on its newly located 12-mile line leading from Puerto Barrios to Manoca, where connection will be made with the company's existing line to Guatemala City. The operation of the newly located line will mean the utilization of the big tunnel that cuts the high grade at Corozo Hill, 7 miles from Puerto Barrios, thus reducing the gradient from nearly 5 per cent to 0.9 per cent. The reduced grade will enable the road to put into effect an improved passenger schedule, and at the same time will increase the drawing capacity of the engines and permit betterments in the freight service. The new tunnel is 753 ft. long, 16 ft. in width and 18½ ft. in height.

RAILROAD CONSTRUCTION IN ECUADOR.—The Congress of Ecuador has recently passed a law providing for the construction of a railway from the port of San Lorenzo del Pailon, or some other suitable port in the Province of Asmeraldas, to the city of Ibarra. This will not affect the construction of the railway from Quito to Ibarra, which will connect at Ibarra with the railway from the port. An appropriation is also made for the construction of a branch road from Ibarra to Tulcan on the completion of the road from Quito to Esmeraldas.—*Commerce Report*.

ANNUAL REPORT

REPORT OF THE DIRECTORS OF THE SEABOARD AIR LINE RAILWAY COMPANY. FISCAL YEAR ENDED JUNE 30, 1916

PORTSMOUTH, VA., October 19th, 1916.

To the Stockholders of the Seaboard Air Line Railway Company:
The Board of Directors submits the following report of the operations of your properties for the year ended June 30, 1916:

Pursuant to Articles and Agreement of Merger and Consolidation dated October 11, 1915, entered into between Seaboard Air Line Railway and Carolina Atlantic & Western Railway and their respective boards of directors and approved by the stockholders of the respective companies at meetings duly called and held in November, 1915, your company, Seaboard Air Line Railway Company, a consolidated corporation, was formed, effective November 16, 1915. By resolution of the board of directors adopted November 23, 1915, the accounts of both the old companies were continued through November 30, 1915, and the accounts of the consolidated company began as of December 1, 1915. In the following report, however, the accounts and statements are for the combined companies, for the full fiscal year ended June 30, 1916, the comparisons likewise being made with the combined accounts for the previous year.

INCOME ACCOUNT FOR YEAR ENDED JUNE 30, 1916, COMPARED WITH YEAR ENDED JUNE 30, 1915.

	1916	1915	Increase
Gross Revenue.....	\$24,494,788.93	\$21,781,316.22	\$2,713,472.71
Operating Expenses and Taxes	17,503,371.36	16,378,498.71	1,124,872.65
Net Operating Revenue (after Taxes).....	6,991,417.57	5,402,817.51	1,588,600.06
Uncollectible Railway Revenue	8,266.53	8,902.94	636.41†
Operating Income.....	6,983,151.04	4,393,914.57	1,589,236.47
Other Income.....	428,573.55	358,761.76	69,811.79
Gross Income.....	7,411,724.59	5,752,676.33	1,659,048.26
Rents and Other Charges.....	229,618.77	214,683.11	14,935.66
Hire of Equipment.....	(Dr.) 101,380.76	(Cr.) 28,343.79	129,724.55
Applicable to Interest.....	7,080,725.06	5,566,337.01	1,514,388.05
Fixed Interest Charges.....	4,560,746.71	4,301,291.39	259,455.32
Balance.....	2,519,978.35	1,265,045.62	1,254,932.73
Full 5% Interest on Adjustment (Income) Bonds.....	1,250,000.00	1,250,000.00	
Net Income.....	\$ 1,269,978.35	\$ 15,045.62	\$ 1,254,932.73

†Decrease.

The Gross Revenue increased 12.46 per cent., Operating Expenses increased 6.84 per cent., Taxes increased 7.32 per cent., Operating Expenses and Taxes increased 6.87 per cent., and Operating Income increased 29.46 per cent.

The Operating Expenses, exclusive of Taxes were 66.68 per cent. of the Gross Revenue, as compared with 70.19 per cent. the previous year; and including Taxes, 71.46 per cent. of Gross Revenue as compared with 75.20 per cent. for the preceding year.

MILEAGE OPERATED.

The mileage of the Seaboard Air Line Railway in operation on June 30, 1915, was.....	3,123.14
Extension constructed between June 30, 1915 and November 16, 191520

Mileage of the Seaboard Air Line Railway in operation Nov. 16, 1915	3,123.34
Mileage of the Carolina Atlantic & Western Railway in operation on June 30, 1915, and on Nov. 16, 1915, not including 1.87 miles which was owned by the Seaboard Air Line Railway.....	325.95

Mileage of the Seaboard Air Line Railway Company in operation June 30, 1916.....	3,449.29
Made up as follows:	

MILEAGE OWNED.

The owned mileage of the Seaboard Air Line Railway on June 30, 1915, was.....	3,047.42
Extension constructed between June 30, 1915 and Nov. 16, 191520

Owned mileage of the Seaboard Air Line Railway Nov. 16, 1915 *Mileage owned by the Carolina Atlantic and Western Railway when merged with the Seaboard Air Line Railway on November 16, 1915	3,047.62
Made up as follows:	325.95

At the time of the consolidation, the C. A. & W. Ry. had under construction an additional eighty-six miles between Charleston, South Carolina, and Savannah, Georgia.	
Mileage owned by the Seaboard Air Line Railway Company, June 30, 1916	3,373.57

LEASED LINES	
Meldrim, Ga., to Lyons, Ga.....	57.65

TRACKAGE.

Howells, Ga., to Atlanta, Ga.....	3.00
Hilton, N. C., to Navassa, N. C.....	2.40
At Birmingham, Ala.....	.07
Freight Yard Jct., Birmingham, Ala., to Bessemer, Ala.....	14.88
At Bessemer, Ala.....	.16
Near Mulberry, Fla.....	1.46

79.62

3,453.19

DEDUCT.

Amelia Peach branch, leased to City of Fernandina, Fla.....	2.00
Silver Springs, Fla., branch, leased to the Ocklawaha Valley Railroad Company	1.90

3.90

3,449.29

Total mileage operated by the Seaboard Air Line Railway Company, June 30, 1916.....	
Average miles of road operated during the year ended June 30, 1916, by the Seaboard Air Line Railway, the Carolina Atlantic & Western Railway and the Seaboard Air Line Railway Company	3,449.29

3,449.25

3,45%

Sidings (including 22.00 miles on Leased Lines and Track-

age)

933.84

NOTE.—Of the above sidings 43.30 miles were owned by the Carolina Atlantic & Western Railway.

SECOND TRACK.

Hamlet, N. C., Northwardly..... 9.61

At Birmingham, Ala..... 3.05

Between Raleigh, N. C., and Cary, N. C..... 7.59

At Tampa, Fla..... 1.32

21.57

Total

FUNDED DEBT.

In connection with the consolidation, the following new mortgage was created and assumed by the consolidated company:

Seaboard Air Line Railway Company First and Consolidated Mortgage dated September 1, 1915, securing an authorized issue of \$300,000,000 of Seaboard Air Line Railway Company First and Consolidated Mortgage Gold Bonds. These bonds are issuable in series, which series may vary in maturity, interest and redemption rates and in other respects.

Of said authorized issue, \$25,644,000 have been issued for the retirement of \$6,000,000 Seaboard Air Line Railway 5% Notes, due March 1, 1916; for the purchase of \$1,700,000 Refunding Mortgage Bonds, pledged under the new Mortgage; for the construction of the Charleston-Savannah Line; for the retirement of equipment and other obligations, including the \$5,725,000 underlying first mortgage 6% bonds of the Carolina Atlantic & Western Railway (of which \$4,225,000 were guaranteed, principal and interest, by Seaboard Air Line Railway); for expenditures for betterments and improvements and acquisition of property and for reimbursement of same, and for other purposes of the consolidated company.

Said \$25,644,000 bonds were issued as Series A, bearing interest at the rate of 6% per annum, maturing on September 1, 1945, and redeemable on any interest payment day at 107 1/2 per cent. of their principal amount and accrued interest, in amounts of not less than \$1,000,000 at any one time. \$22,459.50 thereof are in the hands of the public and \$3,184,500 are treasury bonds.

In addition to the securities retired as above, \$2,280,000 Carolina Atlantic & Western Railway Refunding Mortgage 5% Bonds, Series A, due 1964, which the Articles of Consolidation provided should be exchanged for 6% Preferred Stock, were retired, and there were redeemed and cancelled during the year \$8,000 Florida Central & Peninsular Railroad Company Land Grant Extension 5% Bonds.

For further details of the Funded Debt, see Table No. 4.

MAINTENANCE OF WAY AND STRUCTURES.

ROADWAY, TRACK AND STRUCTURES.

Roadway, track and structures of the company have been properly maintained at a cost of \$2,924,292.52, which represents an expenditure per mile of \$847.81.

SIDE TRACKS.

26.87 miles of new sidings and extensions of existing sidings were constructed, and there were deducted by removal and changes of old sidings, 3.55 miles, making a net increase over previous year of 23.32 miles.

There was also constructed .32 mile of new sidings on leased lines, and there was deducted by removal .15 mile, making a net increase of .17 mile over previous year.

TIE RENEWALS.

Tie renewals were 1,605,959 cross ties and 977 sets of switch ties, and the cost, \$697,255.50, was charged to Operating Expenses.

RAIL.

90.40 miles of new 85-lb. and 33.99 miles of new 90-lb. steel rail, making a total of 124.39 miles were laid in the main line, releasing therefrom lighter worn rail. There was charged net to Operating Expenses therefor, \$84,213.68, and to Capital Account \$189,285.30.

In addition, 23.68 miles of released 68, 75, 80 and 85-lb. steel rail were laid on branch lines, releasing 60-lb. and lighter rail, and there was charged to Operating Expenses therefor, \$5,916.89, and to Capital Account, \$28,921.07.

BALLAST.

26,221 cubic yards of gravel and slag ballast were put under main line track during the year, and of the total cost thereof, \$5,592.72 was charged to Capital Account.

In addition, 58,320 cubic yards of gravel ballast have been distributed ready to be put under the track.

TRESTLES FILLED.

1,937 lineal feet of wooden trestles were filled in during the year and of the total cost thereof, including culverts, \$9,512.66, was charged to Operating Expenses.

TRESTLES REBUILT AND BALLAST DECKED.

There were built during the year out of creosoted timber 3,821 lineal feet of ballast decked trestles, replacing old open deck trestles, and the cost thereof, \$44,544.17, was charged to Operating Expenses.

BRIDGES.

Work has been done on eight bridges, repairing, replacing with steel or concrete, or strengthening them for heavier traffic.

Six of the above bridges were authorized during the year and all of them have been completed.

Of the bridges completed, the principal ones are:

Duval Street Viaduct, Jacksonville, Fla., mentioned in last year's report, a reinforced concrete structure, 42 feet wide and 1,418 feet long, for highway and street railway traffic over Hogan's Creek, and the tracks of the Seaboard Air Line Railway Company and the St. John's River Terminal Company.

Blanding Street, Columbia, S. C., a reinforced concrete highway overpass, 32 feet by 111 feet.

The total expenditures for bridge work during the year were \$53,422.98, of which \$48,982.99 was charged to Capital Account and \$4,439.99 to Operating Expenses.

In addition to the above, and in accordance with Government requirements, work has been started during the year replacing a portion of the Hilton Bridge near Wilmington, N. C. The new work will consist of one Strauss Bascule lift bridge, 111 feet center to center of bearings and two deck plate girder spans, one 92 feet long, and one 73 feet long. This bridge is owned by the Wilmington Railway Bridge Company, which Company is owned and operated jointly by the Seaboard Air Line Railway Company and the Atlantic Coast Line Railroad.

RAIL IN MAIN LINE.

The total operated main line single track mileage of the system, 3,449.29 miles, is laid with steel rails of the following weights:

Miles.	Weight.
45.37	.90 lb. rail.
491.82	.85 "
97.38	.80 "
1,212.96	.75 "
259.00	.70 "
190.29	.68 "
18.87	.65 "
60.48	.63.5 "
3.95	.60.5 "
565.93	.60 "
235.98	.58 "
267.26	.56 " and lighter.

Total 3,449.29

The above does not include:

SECOND TRACK.

Northward from Hamlet, N. C.:	.90 lb. rail.
9.09 Miles.	.90 lb. rail.
.52 "	.75 "
At Birmingham, Ala.:	
1.43 Miles.	.75 "
1.62 "	.60 "
Raleigh, N. C., to Cary, N. C.:	
7.59 Miles.	.85 "
At Tampa, Fla.:	
1.32 Miles.	.75 "

LINES OWNED BUT NOT OPERATED—LEASED.

Silver Springs Branch:	.60 lb. rail.
1.20 Miles.	.60 lb. rail.
.70 "	.56 "
Amelia Beach Branch:	
2.00 Miles.	.50 "

MAINTENANCE OF EQUIPMENT.

The equipment of the Company was fully maintained during the year at a cost of \$3,496,060.89.

Included in the cost of maintenance is \$55,461.61, representing value of equipment destroyed or retired from service during the year.

There was also included in the Cost of Maintenance \$434,963.90 for depreciation, which was credited to Reserve for Accrued Depreciation.

The cost of maintenance per article owned was as follows:

Average cost per annum per Locomotive owned.....\$2,304.12
Average cost per annum per Passenger car owned.....703.20
Average cost per annum per Freight car owned.....55.25

GENERAL REMARKS.

The Carolina Atlantic & Western Railway, owning 325.95 miles of line located in North and South Carolina, was consolidated with the Seaboard Air Line Railway effective November 16, 1915, and the corporate name of the consolidated company was made the Seaboard Air Line Railway Company. The Carolina Atlantic & Western Railway extended through one of the richest and most productive agricultural sections of the South, serving the thriving towns of Hartsville, Sumter, Dillon, Florence and Darlington, and the ports of Georgetown and Charleston. The extension which had been begun by the C. A. & W. Ry., prior to the consolidation will, when completed, provide two main lines between Hamlet and Savannah, both serving different thriving sections.

The value of the Carolina Atlantic & Western lines to the consolidated company is largely due to, First; participation in the traffic of the important ports of Charleston and Georgetown. Second; large revenue that will be derived from the handling of cotton and perishable vegetables produced in the territory served by this line. Third; with the completion of the Charleston-Savannah line, now under construction, and the grade revision work between Hamlet and Charleston, the Company will have a main line with a maximum five-tenths per cent. compensated grade and three degrees maximum curvature between Hamlet, North Carolina, and Jacksonville, Florida, with the exception of three curves of four degrees. That portion of the new line between Charleston and Savannah will have a maximum three-tenths per cent. grade and two degree curves. This new line will save a large amount in the handling of traffic between Hamlet, North Carolina and Savannah, Georgia, as it will allow an increase of 127.5% in tonnage per train as compared with the tonnage which can be handled via the present Columbia route.

During the year extensive grade revision work has been done between Hamlet, North Carolina and Charleston, South Carolina, which will complete the five-tenths per cent. grade line above mentioned.

During the year work has been completed between Raleigh, N. C., and Sanford, N. C., correcting the short and irregular grades in this line, thus facilitating train operation through this district and making a large saving in operating costs. Grade revision work is now in progress on certain sections of the line between Sanford, N. C., and Hamlet, N. C., which will eliminate two pusher grades, and provide a five-tenths per cent. grade against Northbound traffic and an eight-tenths per cent. grade against Southbound traffic on these sections. This will increase thereon the train loading, and equalize the drawbar pull, thereby facilitating operation and reducing hazard and making a saving in operating cost. This grade revision work between Raleigh and Sanford and Hamlet is all located on one engine district.

During the year a modern fireproof machine and erecting shop and blacksmith shop were built at Portsmouth, Va., to replace buildings destroyed by fire. In addition, there has been provided a new power house, flue shop, engine, carpenter and paint shop, two wash and locker rooms, and one engine drop pit. A 50,000 gallon steel water tank was built in connection with the present fire protection facilities. New and modern machinery has been provided for the additional facilities including heavier power cranes for handling locomotives.

New shop facilities and additions to present facilities to serve both the Car and Locomotive Departments are now under construction at Howells, Ga., Raleigh, N. C., and Hamlet, N. C., all of which will be completed during the coming year. The facilities being provided at Hamlet, N. C., are principally steel car repair shops.

Construction is now in progress on an extension from the end of the Lake Wales line eastwardly about 10.00 miles. This construction will add to the main line mileage of the system and will be finished during the coming year.

During the year, construction has been practically completed on industrial spur tracks in Florida as follows: Christina Spur, near Mulberry, approximately 1.00 mile long, and Phosmico Spur, near Bartow, approximately 1.46 miles long. These spurs will be put into operation during the coming year and the mileage added to the main line mileage of the system.

At Plant City, Fla., where our earnings have shown large and steady increases, additional property has been acquired during the year in the vicinity of our freight depot to take care of the growth of business at that point. This will give an additional frontage of 420 feet on adjacent property owned by outside parties and suitable for industrial locations. Team tracks and

paved driveways are now under construction on a part of this acquired property.

A joint industrial track with the Central of Georgia Railway is now being constructed at Savannah, Ga., to reach the cotton storage warehouses of the Savannah Warehouse and Compress Company. This track will also afford opportunity for other large industrial development.

Considerable trackage has been added at Jacksonville, Fla., to reach the industries located on the development of the Commodore Point Terminal Company's property on which are to be located wharves and terminal warehouses.

The former office building at Raleigh, N. C., has been remodeled and converted into a warehouse for industrial purposes.

Combination passenger and freight stations have been constructed during the year at Clarkton, N. C., and Ailey, Ga.

Construction is now in progress on a Union Passenger Station at Ocala, Fla., also on a passenger station at Florence, S. C. Both of these stations will be completed during the coming year.

Important paving and street work has been done at Henderson, N. C., Greenwood, S. C., Savannah, Ga., Orlando, Fla., Tampa, Fla., Bradenton, Fla., Manatee, Fla., and at several other points on the system to comply with municipal requirements.

Necessary dredging has been done during the year to maintain the required depths of water at the following terminals: Tampa, Fla., Jacksonville, Fla., Hutchinson Island, Savannah, Ga., and Charleston, S. C.

7 track scales were rebuilt with concrete foundations and steel "T" beams, replacing wood.

4 old water tanks were replaced with new 50,000 gallon tanks and suitable pumping facilities provided.

114 industrial sidings and extensions to industrial sidings already existing have been constructed or are in process of construction.

33 depots and freight stations have been constructed or substantially added to during the year.

43 passing tracks have been constructed or extended or are in process of construction.

The work of the Valuation Committee created in connection with section 19-A of the Federal Act to Regulate Commerce was continued during the year at a cost of \$51,985.56 which was charged to General Expenses.

The accounts for the fiscal year were examined by Messrs. Haskins & Sells, whose certificate appears on page 11.

ORGANIZATION.

The officers of the consolidated company named in the Articles of Consolidation are as follows:

S. Davies Warfield.	Chairman of the Board.
W. J. Harahan,	President.
Chas. R. Capps,	Vice-President.
W. R. Bonsal,	Vice-President.
D. C. Porteous,	Secretary.
Robt. L. Nutt,	Treasurer.

At the meeting of the Board of Directors on November 23, 1915, the title of Vice-President Capps was designated as First Vice-President and W. L. Seddon was elected a Vice-President. B. H. Inness Brown, representing the law firm of Byrne, Cutcheon & Taylor, was appointed Advisory Counsel of the company.

In addition thereto all other officers of the Seaboard Air Line Railway were continued as officers for the consolidated company.

The following additional appointments were made:

C. S. Lake, formerly General Superintendent, was appointed General Manager, November 23, 1915, and the office of General Superintendent was abolished.

B. L. Hammer was appointed General Development Agent on May 1, 1916, and the office of General Industrial Agent was abolished.

The Board renews its expression of appreciation to the officers and employees for the faithful discharge of their duties during the year.

By order of the Board:

W. J. HARAHAN,
President.

TABLE NO. 9.
CAPITAL EXPENDITURES FOR ROAD AND EQUIPMENT
YEAR ENDED JUNE 30, 1916.

ROAD:	
Engineering	\$ 17,785.46
Land for Transportation Purposes	101,918.90
Grading	246,509.57
Bridges, Trestles and Culverts	24,368.14
Ties	44,162.39
Rails	230,390.99
Other Track Material	74,119.74
Ballast	79,136.95
Track Laying and Surfacing	43,590.95
Right-of-Way Fences	1,316.43
Crossings and Signs	43,873.05
Station and Office Buildings	111,556.80
Roadway Buildings	1,626.96
Water Stations	Cr. 209.51
Shops and Enginehouses	174,913.83
Storage Warehouses	2,879.01
Wharves and Docks	7,110.29
Telegraph and Telephone Lines	2,311.80
Signals and Interlockers	5,543.95
Power Plant Buildings	6,812.56
Power Substation Buildings	7.74
Power Transmission Systems	4,100.78
Power Distribution Systems	7,742.48
Power Line Poles and Fixtures	1,463.67
Miscellaneous Structures	7,321.38
Paving	16,997.55
Assessments for Public Improvements	24,027.43
Cost of Road Purchased	Cr. 1,247.50
Shop Machinery	219,726.31
Power Plant Machinery	18,970.90
TOTAL ROAD	\$ 1,518,829.00

EQUIPMENT:	
Steam Locomotives	\$ 7,901.94
Freight Train Cars	Cr. 90,238.09
Passenger Train Cars	Cr. 4,981.37
Floating Equipment	Cr. 1,615.00
Work Equipment	20,794.62
TOTAL EQUIPMENT	Cr. 68,137.90

GRAND TOTAL	\$ 1,450,691.10
SUMMARY OF EXPENDITURES:	
Additions and Betterments on Existing Mileage	\$ 1,497,796.60
Equipment Acquired	Cr. 68,137.90
Expenditures for Extensions	Cr. 21,032.40
TOTAL AS ABOVE	\$ 1,450,691.10